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## MP joins job loss protest

UNIONS at Burroughs' Cumbernall factory and the local MP are pressing jointly for management to reconsider its plans for 355 redundancies (CW, November 27).

Officers of the staff union TASS accused Burroughs of using a supposed shortage of orders as an excuse to push through a reorganisation which entails reducing staff.

Labour MP Norman Hogg (East Dumbartonshire) cabled Burroughs' new chairman Michael Blumenthal in the US protesting about the cutbacks and has been meeting UK management in London this week.

John Inray, TASS convenor at Cumbernall, described the company's redundancy offer as "ridiculous," and said he was pressing for terms to be improved.

## Antiquated phones

BRITISH TELECOM's new chairman George Jefferson last week echoed the fear of his predecessor Sir William Barlow, that borrowing limits imposed by the government on BT would retard the UK's progress in telecommunications.

Our telephone network was among the most antiquated in Europe because successive governments had failed to allow investment in it, he told the Business Equipment Trade Association. Last year investment was equivalent to £18 per head of population, compared with £51 in France, £36 in the US, £32 in Japan and £30 in West Germany.

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# Xerox attack on electronic office

XEROX has launched its first real attack on the electronic office market, in the form of a local network system that can incorporate a wide range of Xerox word processors, hard discs, and non-Xerox equipment.

The 8000 Network System, as it is called, is basically a repackaging of the Ethernet communications scheme (CW, January 3) with a new processor and a new low-cost laser printer added.

The 8000 processor is a proprietary 16-bit design with up to 512K-bytes of memory that can be used as a communications controller, as a printer server, or as a file server. In a small configuration with only one processor it could carry out all these functions.

The 8000 NS printer works xerographically like the 5700 just announced (CW, October 2), but is considerably cheaper. For \$16,635 it prints 12 pages a minute, fairly slow compared to its existing rivals on the market but attractive because of the cost.

Any Xerox 800 or 850 series word processors, so long as they have communications facilities, will be able to be connected to the 8000 network. Hitherto only the latest 860 model has been able to use Ethernet. The communications controller will allow links to other makes of word processors, and will provide specifically Teletype, 2780, and 3270 protocols.

Pricing is complicated as software is unbundled, but a basic file server system will cost \$21,000.

First US shipments are scheduled for first quarter 1981.

## At last, the GEC viewdata launch

GEC, one of Britain's largest and richest companies, has launched a private viewdata system with the claim that it stemmed from a prototype produced even before the BBC announced its Ceefax teletext system plans in 1972.

Introducing the GEC Viewdata 4000 system and a viewdata bureau service, technical director Sir Robert Clayton failed to explain why the company had taken so long to market its product.

Sir Robert said that GEC had played a major role in the development of both teletext and viewdata. It had helped to unify Ceefax and its IBA rival Otis (standards) and persuaded British Telecom to adopt the same standards for Prestel, launched in March 1979.

GEC had produced black and white teletext receivers in 1972 and colour ones two years later. By

1977, the company had delivered over 200 viewdata receivers and there were now 47 GEC 4000 series computers devoted to viewdata services.

Sir Robert agreed that GEC's chip sets were not the first on the market but its promises were the most reliable. They were now found in over half the Prestel terminals in service, while its modems were found in over 70%.

He expected commerce and government to make use of private viewdata much more than teletext services or Prestel.

Viewdata 4000 is aimed at the private user, costing £50,000 for an eight-port 30,000-page system with systems available for up to 150 ports and 100,000 pages, all on four to six months' delivery.

Teletext capability is said to be months rather than years away, but this involves terminal characteristics more than the system itself.

With 10 megabytes of Shugart Winchester disc and \$28,000 with a 58-megabyte disc. A basic processor comes with 10 megabytes of fixed disc, a floppy disc drive for loading programs, and a supervisory VDU, without software this costs \$12,000.

A database management system is due to be added in six to eight months' time. The printer, which has a resolution of 300 dots to the inch, is not to be offered for use other than with Ethernet, according to current plans; this will reduce the attractiveness of its low cost since the rest of the network will involve considerable investment.

First US shipments are scheduled for first quarter 1981.



CLAY: "GEC pre-empted Ceefax" claim.

The bureau service is available now at typical rates of £5,500 a year for 100 pages or £17,500 a year for 2,500 pages with printing done either locally or at the bureau.

## France makes major move into micros

FRANCE is to make a significant move into the business of manufacturing microelectronics circuits next week when the first plant of Eurotechnique in Aix-en-Provence, near Marseille, is officially inaugurated.

The creation and progress of Eurotechnique, a joint venture between US company National Semiconductor (40%) and the Saint-Gobain - Pont-A-Mousson group (51%), has been spurred on by holdings company Saint-Gobain since it bought a 31% share in the French government-backed Compagnie des Machines Bull, the holding company for CIT-Honeywell Bull. Saint-Gobain was also responsible for Machines Bull buying a 23.3% share in Olivetti earlier this year.

Eurotechnique is expected to be manufacturing memories, in particular National's 2147 4K static RAM, microprocessors and telecommunications chips using MOS technology at a rate of 5,000 circuits a month in 1981 and 50,000 circuits a month by 1985. According to M. Jean-Luc Grand-Clemin, the company chairman, the joint venture will break even in 1982 and generate profits the year after.

His two main objectives are to capture 6% of the European market for MOS chips by 1984 and to build up exports within Europe.

60% of its production. About \$23 million (£110 million) has been injected into the venture by the French state under a government funding scheme for independence of high technology industries called "Plan composants".

In the agreement with National Semiconductor, Eurotechnique will have access to the company's NMOS technology, but will only be selling its own products. The aim is to devote 11% of turnover to research and development.

Eurotechnique considers that the European market for MOS products should grow from about \$750 million this year to \$1.9 billion in 1985.

## H-P launch

HEWLETT-PACKARD has adopted an aggressive pricing policy with the launch today of two products for commercial users, a laser printer, HP 3000 Series 44 and a minicomputer. The new computer, the HP 3000 Series 44 has double the storage capacity of the company's Series III computer and a price of about \$20,000. It is the top of the line addition to the existing HP 3000 range and increases the maximum storage capacity of the Series III from 2 to 4 megabytes.

## UKITO snubs Telecoms Council

THE pressure group UKITO, UK Information Technology Organisation, has declined to join the Telecommunications Council, the new association of pressure groups, because it feels subsidiaries of foreign companies, for example IBM, predominate.

The Telecommunications Users' Association has also decided against joining, feeling it is inappropriate for a general user association, which maintains independence from suppliers and government departments alike, to join an association largely composed of manufacturers.

At the launch of the Telecommunications Council last week, council chairman John Gorst MP said the TUA did not subscribe to its aims of bringing about greater liberalisation of telecommunications in the UK but was more interested in building a cosy relationship with British Telecom. Gorst was an early officer of the TUA's forerunner, the Telephone Users' Association.

## Tesco PoS 'conjecture'

REPORTS that Tesco could be spending £100 million on PoS equipment are "pure conjecture," according to Barry Grauge, director for management services at Britain's largest supermarket chain. "Across the group that is decision for tomorrow rather than today," he added. "We're not going into all our 600 stores until we can make sure the decision is absolutely right."

Tesco has ordered £5 million worth of equipment for 15 of its largest stores, including 600 IBM 3683 terminals plus Case 9,600 bps rapid poll modems.

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## NEWS IN BRIEF

### Inmos adds to board

FOUR non-executive directors, Sir William Barlow, Martin Harris, Peter Moody and John Sawkill, have been appointed to the board of Inmos, the UK's sole microelectronics venture. They were nominated by the National Enterprise Board, which still holds a 70% stake in the company.

Sir William Barlow, now chairman of Thorn EMI's Engineering Group and a director of Royal Worcester, resigned as chairman of the Post Office last April because of the government's cash limits. Dr Dick Petritz, managing director of Inmos, has also been appointed chairman of the board.

### Annual Which

THE Which Computer Show held at the National Exhibition Centre in Birmingham last week, is to become an annual event, though the next will not be until January 1982. More than 23,000 visitors were attracted to the show, and there was no "trade only" restriction. Report page 9.

### One up to ICL

ICL has scored a modest victory over the competition in the local authority arena, by winning an order for an M225 system worth £76,000 from West Somerset District Council. The council, which currently uses a Burroughs L9 VRC, evaluated tenders from Burroughs, IBM, Univac and CMC, as well as from ICL.

### Quest reduction

COST saving from volume production is the reason given by Quest Automation for a reduction in the price of its Micropad handprint data entry terminal from £1,725 to £1,295.

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## COLLAPSE OF CPP AND PRC

# Services hit by slump

by Keith Jones

AS the recession bites, lay-offs by computer hardware manufacturers are being followed by cuts in the services sector. Two major services companies, CAP-CPP and the US-based Planning Research Corp, have announced the demise of major UK divisions and blamed the current economic climate.

CAP-CPP has given notice to the 28 staff at IBM software products vendor, CPP UK, while PRC has axed 50 people at the offices at Twickenham, Woking, and Bristol which handled its commercial minicomputer systems business in the UK. Many of the PRC International staff affected were taken on by the firm earlier this year after the demise of Gamma Associates.

A question mark was raised over the future of CPP UK early this year when Boole and Babbage took over marketing of its own software products, and Applied Data Research extracted an agreement handing over UK marketing of ADR packages by the end of 1981. The handover process was accelerated when CAP-CPP started making to prospective buyers for CPP and has culminated in an announcement by ADR that nine people from CPP who sold ADR products will be joining ADR's UK operation on January 1.

Meanwhile, CAP-CPP is carrying on talks with hardware PCMs who might be interested in improving the product range developed by CPP itself which so far has enjoyed only limited sales success. In the US only one customer for Improve has been picked up by the distributor there, Inmac Products Inc (CW, November 27).

CAP said that the recession in the UK had increased the time needed to make CPP profitable and that the CAP board had decided that CPP needed "too heavy an investment at this stage".

### Optimism

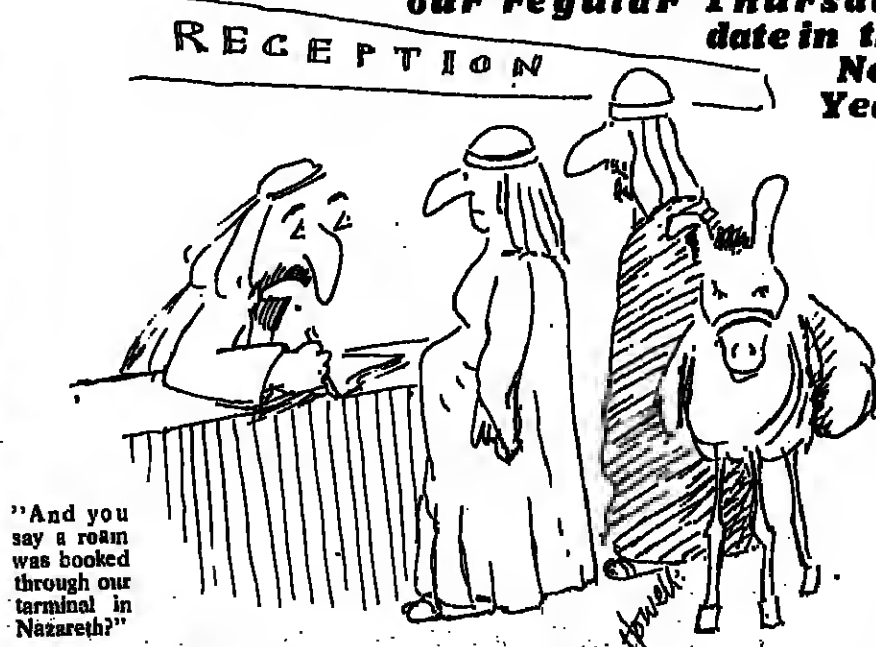
John Toups, president of Planning Research Corp in the US, told Computer Weekly that PRC was very optimistic about the UK market in spring this year when a large part of the Gamma operation was acquired by the company. But he added, "Sales did not come up to expectations because of the poor state of the UK economy and I can see no change for another 12 or 18 months. In the US no reductions have been needed yet in the minicomputer systems side of our business."

The core part of the UK minicomputer operation being retained is the bureau and maintenance side based at Nottingham. The engineering consultancy section is being sold.

● Turn to page 10

Happy Christmas!

Today's issue is the last before Christmas. We at Computer Weekly wish all our readers and advertisers a very happy Christmas. We'll be back on December 31 and return to our regular Thursday date in the New Year.



"And you say a room was booked through our terminal in Nazareth?"

## Oxford 2980 service collapse

INTERACTIVE computing facilities at Oxford were cut back dramatically this week because of drastic overloading on the University's ICL 2980, the machine originally considered more than adequate to run the service. A replacement service based on three Digital Equipment VAX machines is not expected to start until the spring, and only then on a limited basis. Interactive users were told at a special meeting last week that the use of MAC on the 2980 would be restricted from Monday, December 8, to program editing and short Algot and Fortran compilations.

All other work would be consigned to batch queues and any user found breaking these restrictions would immediately be barred from using the service. The number of terminals supported by the reduced interactive service during the day will be limited to 30 compared with 40 previously.

Users were told that a move to VME/386 version 5X37 might allow more MAC virtual machines, although this was considered far from certain. Suggestions by users that Edinburgh University's Easas interactive operating system should be adopted were rejected.

## Gallium circuit 'first'

THE first gallium arsenide-based linear integrated circuit will be produced commercially by Siemens next month.

Designated CGY 21, the device is an amplifier with a 0.04 to 1GHz frequency range, and is intended for use in CATV receivers, certain professional and military applications and future satellite receivers.

Laboratories all over the world have been researching the technology but only small quantities of military and telecom spec devices have been released to date and general purpose spec devices have not been available commercially.

CGY 21 is composed of two amplification stages using field effect technology. The input transistor has an original feature in its gate terminal, subdivided into six parallel sub-gates, each 150 microns thick.

Siemens predicts that integration levels will increase in the future as they did for silicon-based integrated circuits. By the end of 1981, Siemens hopes to have an amplifier functioning at up to 100GHz.

● Turn to back page

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Job opportunities: Pages 22-39

From the system builders.  
The system builders' computer.

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## Briefing

### ICL thinks of appeal

ICL may appeal against a High Court decision ordering the company to provide Telecomputing with confidential documents referring to its marketing of the Oxford software house's TPS system, within 56 days.

Telecomputing has stepped up its original £2.5 million claim to more than £16 million and the case will be heard on October 26, 1981.

### Hotel fire

A GROUP of IBM employees escaped unhurt from the fire that swept through the Stouffer Inn Hotel in New York City last week. The 26 dead included several members of the board of Arrow Electronics of Connecticut, described as the biggest distributor of electronic components in the world.

### Robot scheme

A CO-OPERATIVE scheme to develop image recognition capability for robots has been set up by the Science Research Council and GEC Hirst Research Centre. The work will be carried out at Edinburgh University using a Clip 4 array processor. SRC funding will be £80,000 over three years and GEC will contribute rather more in cash or technical assistance.

### Viewdata adaptor

A VIEWDATA adaptor designed to sell for under £200 is to be marketed by London-based Zycor. Called Teledek 2000, the adaptor was designed around the NatSemi SC/MP microprocessor by J. Hemstead Associates, and received British Telecom approval in May. A production agreement has been concluded with Sheffield-based manufacturer Greendale Electronics.

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## COMPUTERVIEW

If the ways of gods and men are, as the Irish  
put it, strange indeed, there is even more  
confusion about government funding for the  
computer industry.The National Enterprise Board, the public  
body with most experience and most  
funds invested in the computer industry,  
has lost most of its board of management in  
a series of well-publicised resignations over  
the past two weeks.A similar exodus from any private company  
handling the same level of investment  
would have caused major upheavals in the  
Stock Exchange and the withdrawal of back-  
ers.Although the NEB's handling of the For-  
ranti and ICL rescue operations was compe-  
tently done, and the eventual sales of share  
stakes acquired in those two companies re-  
sulted in £50 million profits, the resigna-  
tions will augment already grave doubts  
about the NEB's future in any public funding  
policy.The NEB announced recently an initial £2  
million investment from its proposed £25  
million pool in a joint venture capital com-  
pany to be run by Jack Melchor, a successful  
venture financier from the United States.Some confusion has arisen over Melchor's  
role. It is primarily to find an American

## No Irish joke

technology which can be brought to the UK  
and manufactured here. (The role of finding  
regional companies and providing them with  
British "seedcorn" investment is allocated  
to the NEB's Manchester office.)This £2 million sum is surely far too little  
too late, and is being directed at the  
wrong people. It is too little because the sum  
is a drop in the ocean compared to the £120  
million put into the Very Large Scale Inte-  
grated Circuit project by the Japanese -  
£55 million from government sources. And  
£2 million is minuscule compared to the £50  
million the Japanese have since put into the  
related Software Development Project.It is too late when set against the £4 mil-  
lion taken back from the National Research  
and Development Council in taxes earlier  
this year.But why is NEB money also being spent  
on American ideas? There are plenty of po-  
tentially lucrative British projects in search  
of money. To go to California in the mannerof the NEB is to show conclusively that  
there is no British computer industry invest-  
ment policy, only a series of impromptu  
reactions.If the points needs reinforcing, listen to  
the National Economic Development  
Office's comments on the lack of a British  
policy for the microelectronic industry (see  
page 10).What we have are five public or institution-  
al bodies - the National Research and  
Development Corp, Finance For Industry,  
the NEB, the Industrial and Commercial  
Finance Corporation and the Department of  
Industry. Add to these any number of other  
quasi-government agencies offering finance  
to would-be industrialists, and in some  
muddled thinking at the top, and it is any  
wonder that home-grown British ideas bring  
home-grown employment so rarely?The major difference between Eire and  
the UK in all this is a body called the Indus-  
trial Development Authority. In the Repub-lic, they have a single body, operating  
within a well-defined policy, which does  
with both inbound investment and local  
entrepreneurs.There is a 10-year tax holiday on export  
for an approved project in the computer  
manufacturing area. Software products are  
treated similarly, through the EEC Commis-  
sion has forced 10% tax to apply from next  
year.In addition, the Irish or foreign enter-  
preneur pays no personal tax on profits from  
the project where job creation and exports  
are involved.While the UK regional development  
authorities offer similar incentives, though  
on a far less generous scale, they lack the  
clarity about policy objectives which charac-  
terises the Irish effort.It is wrong also to dismiss Ireland's suc-  
cess with disparaging comments about  
cheap labour. Irish labour costs are not  
higher than those in the UK, and productiv-  
ity gains from the new technology installed  
under the generous grant incentives offered  
by the IDA attracts much overseas money,  
particularly American.Without a plan or a discernible policy,  
confusion is the only name to give public  
funding of the UK computing industry.

## LETTERS to the EDITOR

Programmer's  
ideas for a  
new languageIn Focus of November 27 you  
mention the needs for a new pro-  
gramming language project and the  
lack of enthusiasm with which  
Ada has so far been greeted by DP  
in general, as have several other  
State-of-the-art languages.Do you think part of the prob-  
lem is that most languages are  
created either by academics, who  
are mainly concerned with com-  
prehensiveness and soundness of  
structure, or by professional DP  
men, who are more interested in  
practical applicability, and ease of  
use? I don't see how we can hope  
to have a good up-to-date commer-  
cial DP language until the two  
ideas get together in some sort of  
forum where their ideas could be  
pooled.I wondered whether you would  
think it worthwhile to put forwardthis idea in your columns and  
invite both academics and com-  
mercial programmers to submit  
their ideas about how such a forum  
could be set up and what features  
the language to be designed might  
contain.They say every programmer  
thinks he could design his own  
language. I don't, because I'm not  
an academic and I wouldn't know  
how to make it watertight. Like  
other programmers, however, I do  
have some vague and unorganised  
ideas about what I'd like to see in  
the new language. I have outlined  
these below. I could provide a  
more detailed account to act as an  
Aunt Sally for my colleagues and  
thus start the ball rolling.PROGRAMMER  
(name and address supplied)OUTLINE SUGGESTIONS FOR  
A NEW COMMERCIAL  
DP PROGRAMMING LANGUAGETHESE ideas are put forward as suggestions, not as precise specifica-  
tions, but as features that professional programmers might find useful.  
In what follows, programmer-defined names are in upper case and keywords  
in lower case, though so precise syntax is intended.The language would be applicable and would be used to write a system  
rather than individual programs. Each statement would be a definition of the  
form: X means Y.A possible classification of statement types would be:  
1. Data type definitions (cf. Pascal).  
a) Primary data (raw). Manually input into the system.  
i) Elementary items.  
ii) MONTH means integer, range 1..12.  
b) Data structures.  
i) "DATE means DAY, MONTH, YEAR".  
ii) Derived data. Compiled and output from system. An "IF" feature would be  
provided here."TAX means GROSS \* 0.3".  
"NET means GROSS - TAX".2. Operational definitions. Used to provide new operators.  
i) "DATE means DAY, MONTH, YEAR".  
ii) "X MOD Y means X DIV Y \* Y".  
iii) "X MOD Y means X DIV Y \* Y".  
iv) "X MOD Y means X DIV Y \* Y".From a set of such statements a "compiler" would generate validation and  
update software, perhaps interactive, to maintain system databases, and a report-  
ing and query facility to "harvest" that database. Much of this could be pro-  
grammed to be user-friendly, with the programmer doing the "hard" bits.Twelve pertinent questions  
for would-be purchasersYOU have outlined the plight of a  
Mr Randall who has encountered  
difficulties during the acquisition  
of a Burroughs B80 machine (CW,  
March 13). Mr Randall has my  
sympathy. However, there is  
another side to the case.I find that would-be purchasers  
are all too often blissfully ignorant  
of the many problems that beset  
the unwary. They do not appre-  
ciate that there may be more than  
one solution to their needs. They  
imagine that because a particular  
item happens to suit an organisation  
they know, it will suit them  
too. Some put their fate in the  
hands of the sales representative;  
others are happy to leave the  
choice to their staff - the "try  
them all and tell us which one you  
like" approach.The one thing they have in com-  
mon is that they tell me they have  
no need of an independent adviser,  
they are sufficiently well informed.  
A few of the questions I would  
ask them are:

1. Why do you want this equip-  
ment?
2. What is it going to do?
3. Have you seen it performing  
this task?

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First Finnish mini  
reaches the UKA FIRST for Finland in the UK  
market comes from Nokia, the  
paper pulp to cable conglomerate,  
with the launch of its Mikko  
microcomputer last week.It is priced at between £15,000  
and £25,000 complete with a basic  
accounting package.The basic 16-bit machine, with  
bit slice type central processor and  
separate universal device control-  
ler, has a main memory extendable  
to a half-megabyte and is supplied  
with a full range of mainly Nokia  
manufactured peripherals.The software is parameter driven,  
but Nokia says it is prepared to  
customise it to suit customer  
needs.Kurt Wickstedt, the Finnish  
executive vice-president of Nokia'selectronic division, said that Nokia  
was coming to the UK to learn as  
well as to sell.He said that UK software was  
the best in the world and Nokia  
had used UK expertise to prepare  
the Mikko series 3 in the UK  
next year are 18 to 20 units.Nokia's arrival in the UK mar-  
ketplace, which Wickstedt said  
was, after Sweden, the toughest in  
the world, extends to three the  
number of Scandinavian mini  
manufacturers operating in the  
UK. The company also owns 50%  
of British Tissue which dominates  
the tissue market.In Finland Nokia has some of  
the basic constituents of an inte-  
grated manufacturing operation. It

## DEC seal of approval decision

SPURRED on by the collapse of  
some of its leading OEM systems  
houses, Digital Equipment has in-  
troduced to the UK the practice of  
authorising distributors, inaugu-  
rated by DEC in the US about 18  
months ago.DEC expects up to eight of its  
50 or more existing commercial  
OEMs to become authorised by the  
middle of next year. About  
15%, more than 40, of the Ameri-  
can installations are now  
authorised although nearly twice  
that number applied  
unsuccessfully. DEC hopes that  
up to 80% of its OEMs will be  
authorised eventually.An OEM must present DEC  
with its last two years' trading  
figures so that DEC can check onits profit, cash flow and funding  
position before granting authorisa-  
tion.DEC will carry out a survey of  
the OEM's customer base to assess  
the quality of support provided  
and will ask its own sales, support  
and credit personnel if a "profes-  
sional relationship" exists between  
DEC and the OEM.Approval for authorisation will  
have to be renegotiated annually.In return, the authorised distributor  
will enjoy certain advantages  
over other OEMs, including finan-  
cial support for advertising and  
publicity, and the right to use the  
DEC logo in promotional material.DEC stressed that OEMs could  
collect in the future would have to

## Councils co-operate

AS part of a major co-operative  
venture to develop a standard  
system for management and ac-  
counts to their direct works de-  
partments, more than 140 local  
authorities in England and Wales  
are each contributing up to £1,800  
to pay Logica and Price  
Waterhouse to prepare a func-  
tional specification.Logica says it is collaborating  
with Price Waterhouse because of  
the latter's experience in local  
authority accounting. Apart from  
the Chartered Institute of Public  
Finance and Accounting, which  
gave them the contract, the two  
firms ought also to thank the gov-  
ernment. The Local Government  
Planning and Land Act 1980 re-  
quires local authorities to produce  
separate accounts for their directworks activities and show a profit  
on them from April 1, 1981.  
Direct works are those carried out  
by personnel employed directly by  
a local authority.As well as having to complete  
the functional specification by the  
end of March 1981, Logica will  
also have to have strategies drawn  
up that will enable different types  
of local authority to implement the  
common specification.

## Job fears

COMPANIES are using the recession  
as an excuse for sacking staff  
and then bringing in new tech-  
nology to replace them. So claims  
the clerical union Apex, which is  
predicting 500,000 job losses pro-  
duced by new technology by 1983.WICKSTEDT... "Coming to the UK  
to learn as well as to sell."makes its own boards and has re-  
cently bought an American chip  
and LSI circuit design group.The Mikko installed base in  
Finland, concentrated in the bank-  
ing sector, numbers over  
1,500 machines.Bomb attacks on  
French centres

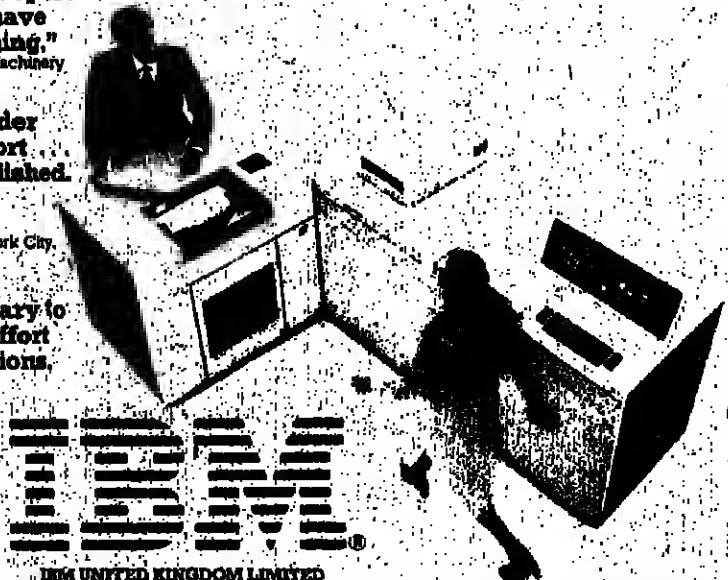
by Jack Gee

FRENCH police are bracing  
themselves for a new wave of fire  
bomb attacks on computers fol-  
lowing the recent blaze at a central  
Paris office building owned by a  
major insurance company.Computers housed in the base-  
ment of a seven-storey block near  
the opera house were outdamaged  
by the fire, which spread to the  
roof where five office workers were  
rescued by the fire brigade.Police evacuated 600 people  
from the burning building during  
the evening rush hour.A few minutes later, an anonym-  
ous telephone caller claimed res-  
ponsibility for the outbreak on be-  
half of the self-styled "Clodo"  
movement which was unanswerable  
already for a long catalogue of at-  
tacks on computers.Clodo, a slang term for  
"tramp", stands for Comité de  
Libération Ou de Detournement  
des Ordinateurs (committee for re-  
leasing or setting fire to compu-  
ters).The organisation first made  
newspaper headlines last April  
when it placed bombs at the Tou-louse computer centres operated  
by Philips Informatique and CII-  
Honeywell Bull.There was no damage and Clodo  
made its involvement known by  
scrawling slogans proclaiming  
"Out with computers".Clodo emerged again on May 20  
when it burned down ICL's shop,  
again in Toulouse. Computer  
workers returned to the attack in  
the same city on June 25 when  
they ransacked a hall which had  
been prepared for an international  
symposium.The raiders left behind the mes-  
sage: "Scientist swine. No to capi-talist data processing".  
CII-Honeywell Bull's centre at  
Looveciennes, near Paris, was  
singled out in August for a series of  
attacks. First, a ten-pound plastic  
bomb was left outside the wall of  
the building, failing to detonate.Then a security door protecting  
computers and confidential soft-  
ware was destroyed, police finding  
next day a one-foot deep hole  
bored in a wall, apparently for a  
future explosive charge.Clodo switched its attention  
back to Toulouse on September 12  
when three fires gutted a computer  
and electronics goods shop.MICRO Focus will introduce CIS-  
Cobol for Intel's 8086 16-bit  
microprocessor next month. The  
system is currently under demon-  
stration on Roxel Business  
Machines' RX30 at Micro Focus'  
California base.Implementation involves a  
previously-installed compiler ele-  
ment, but a new 8086 run time as-  
sembler system uses the segmentregister to address the whole  
memory space, permitting multi-  
user system memory sharing.CIS-Cobol version 4.3 is a Micro  
Focus-developed ANSI 74 Cobol  
compiler and run time system for  
microcomputer and microproces-  
sor-based terminal systems cer-  
tified uniquely by the US Govern-  
ment General Service  
Administration.

## CIS-Cobol link for 8086

388  
deliversThe productivity advances of IBM's new System/38  
are being confirmed in early installations.IBM has started delivering System/38s  
to customers.And customers have started delivering  
comments like these to IBM:"RPG III and the interactive data base  
utilities are helping us to implement new  
systems quicker than we ever thought  
possible."

Mike Finch, Hospital Saving Association, London.

"I created a special equipment report  
in 15 minutes flat. Before, it would have  
taken a day and a half of programming."Chuck Peter, Data Processing Manager, Road Machinery  
and Supplies Company, Minneapolis."We've developed an online order  
entry system with one-third the effort  
and the application is much more polished.  
We're very pleased."Larry Brenner, Director, Corporate Information  
Services, United Merchants and Manufacturers, New York City."The System/38 significantly  
reduced the amount of code necessary to  
write a program and the time and effort  
required to move into new applications.  
We're extremely enthusiastic."Larry Peterson, Director of Data Processing,  
St. Olaf College, Northfield, Minnesota.

IBM UNITED KINGDOM LIMITED



## Downtime

by Chad

### Those bleeps from Outer Space

IT'S that time of year again. Now he laments — how many of you are going to include with presents for your children of hand-held Space Invaders games, the strict instructions that they must not be played in public?

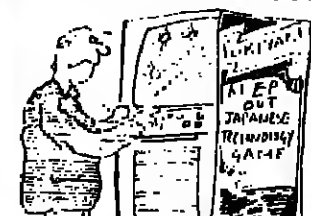
Ed Feigenbaum, of Stanford University, flew over here for the Infotech Review, and was driven nearly crazy by the youth sitting next to him in the plane, whose beeping noises did not stop once during the entire flight.

I think I will suggest to the makers that they incorporate an

earphone socket. Of course that might make people think the beeps were not actually necessary. You've got to have some way of shifting these chips!

On the other hand, let's admit that what we really want to do is buy ourselves a home computer kit. Computer people are strangely attracted to busmen's holidays, aren't they?

Justify it by thinking how those of us with jobs have got to keep the velocity of circulation of money up. Till after our Christmas break, Joyeux Noel.



I SAW a picture of German Communist demonstrators charging the headquarters of NATO's giant economy size "bang bang you're dead" exercise, and their banner was all about a computer, would you believe. Something about "Your computer against ours".

I've heard of computer simulations of World War III but I never knew that the German Communist Party had participated!

It would, of course, be a great idea for the American and Russian computers to fight out the war between them, leaving us humans to get on with more constructive things. But what would happen if the computers decided to call a truce?

## British Rail's ode to autumn leaves me . . . stranded

I'M as ready as the next man to applaud the suggestion that maybe advanced technology isn't the answer to all our problems, but I would not expect to see organisations that are supposed to be impressing us with their technical acumen taking the course that British Rail is currently pursuing.

The other evening I spent a delightful 50 minutes sitting in a stationary train outside Balham, immobilised, I understand, by "leaves on the line".

Now what steps do you suppose BR is taking to deal with this problem? It has put up posters in various Southern Region stations that read:

Leaf! Leaf! Go away!  
Fall again another way.  
Drop in the fields — that would be fine —

But don't descend on the railway line.

Or we'll have you  
As residue  
— crushed upon the rails —  
And wheels will spin  
To show the state you've got us in.

I suppose we should be open minded about this, and wait for the figures to see whether this ode actually dissuades any leaves from falling on the track. After all, I keep being reminded of Uri Geller, astrology, "There are more things in Heaven and earth, Horatio . . ."

Why should they try using boring old technology to deal with the leaves? Still, I shall get worried if BR starts using the same technique to try to solve all its other problems. "Signalal Signals! Do not fall!" "Wheel

bearings! Do not wear out!"

Maybe this is a seasonal syndrome, unknown to those of us who work in heated offices. At this time of year British Rail management turn brown and shrivel and fall to the ground. (The passengers do this every time the fares go up.)

Come spring Sir Peter Parker's merry men will blossom forth into their usual technology-touting selves, with more plans for 125 mph trains that run at 60 mph, and so on.

In the meantime, a tribe of Red Indians from Saskatchewan is being imported to do a reverse rain dance all winter to keep the snow off the points. BR's advanced technology group from Derby are planning to digitise this for use in following years, but I fear they will run into software copyright problems.

## MICHIE'S PRIVATEVIEW

### The physics text book is a fraud

PHYSICS is too often sold as a calculational cure-all for those who want to predict things. Actually it was developed for another purpose: to help physicists to clarify their minds.

Euclid's geometry is bad enough. We were all at some time coaxed, bamboozled or lured through it. But at least when answers can be derived from the axioms and data (they can't always, they come quite quickly). There is no fear of having to drop the whole project on finding the required chains of calculation and inference to be too long to execute in practice.

#### Dream

With physics, once we leave cooked-up classroom problems for the real world, the matter stands differently. If some physicist disagrees, let him write a program to control a robot monocle. He will thereby discover the heuristic adequacy problem. In general his case is even worse. The physics text also fails on epistemological adequacy (see McCarthy & Hayes, 1969, for these terms).

Euclid was far many of us a first glimpse of an enchanted world of order, completeness, consistency, harmony, without ambiguity, fuss or fuzz. Every statement is either true or false, and if true then provable from the axioms. Around this dream of perfection were assembled the philosophies of the



Figure 1

Greek world, and a very great nuisance they eventually became. Almost two millennia after Plato, it shook free of ideal. Euclidean forms. Finally despairing, he decided to go for a more feasible model of planetary motion, and thus opened the doors of computational astronomy.

#### Vantage point

So if the glimpsed scene turns out to be not what it seems, what then? A new viewing point sometimes aids restoration of a fractured scene by placing it in an enlarged perspective. As each new

floor is added to the edifice of science, a vantage point is provided from which to view the cracks and gaps of lower and earlier structures.

To illustrate, let us draw a triangle, any triangle at all (see figure 1). The dotted line dissects the angle BAC into two components BAD and DAC. If the line AD is produced indefinitely as indicated by the dotted arrow, must it necessarily intersect the line BC?

Of course it must! But can you get out your geometry books and prove it? Peter Hilton of Case Western Reserve University assures me that you cannot. The notion that a closure (line round which a bug could run for ever) partitions the plane into just two sets of points — "inside" and "outside" — and that passage from one partition into the other cannot be achieved without crossing the boundary, is not embedded even implicitly in the axioms, although it is in elementary set theory. But in the edifice, set theory is housed on a higher story than Euclidean plane geometry.

#### Monkey

Returning to physics, consider a warehouse, robot named Monkey who has been asked to fetch a tool kit (for some reason code-named bananas). The latter is suspended high above the floor by a string, beyond Monkey's reach. In a corner stands a pair of garden shears with long handles long enough for Monkey to be able to reach the string with the blades. What does Monkey, or Monkey's keeper, need to know about this little world in order to calculate a plan of action? How much of the needed knowledge can be found in the physics texts?

Physics might tell him quite a



Professor Donald Michie is head of the Machine Intelligence Research Unit at Edinburgh University.

few things he didn't want to know, like the terminal velocity of Bananas if the supporting string had somehow been cut, or the heat generated on impact. On the general problem of situations, actions and causal laws, the physics text reveals itself to Monkey as a fraud.

#### Ghosts

In a later Privateview we return to Monkey. Meanwhile the reader may wish to glance at P. J. Hayes' "Thinking Physics" in Expert Systems and the Micro-electronics Age, Edinburgh University Press, 1979. Just as some ancient Greek, aware of the gap between the ridiculously small scope of Euclid, might have put out an exploratory probe into the unknown calculus of sets, so today the first approaches are being tried to tomorrow's calculus of causality.

The ghosts of the geometers waited more than 2,000 years. Industrial robot technology, if nothing else, will this time ensure a faster pace.

Donald Michie

#### REFERENCE

McCarthy and P. J. Hayes (1969). Some philosophical problems from the standpoint of artificial intelligence. In Machine Intelligence 4 (eds. B. Meltzer and D. Michie) pp. 463-502. Edinburgh: Edinburgh University Press.

## TEN YEARS AGO

From Computer Weekly of December 10, 1970.

RESIDENTS of Watford, Bromley, Croydon and Paddington have been cast as "guinea pigs" by the Post Office in a unique experiment. Records stored on a computer file to "test" the postman's ability to deliver mail. The experiment, organised by the Post Office, involved a series of far-reaching changes in postman's technology and personnel. The experiment, involving the appointment of Professor John Westcott and installation of a new Control Data 6400 system at the college,

launched a fifth subsidiary, this time based in Sweden. Jointly owned by CAP France and CAP Ltd, CAP Europe is the largest software house based outside the United States. The University of London's Imperial College of Science and Technology has installed a series of far-reaching changes in postman's technology and personnel. The experiment, involving the appointment of Professor John Westcott and installation of a new Control Data 6400 system at the college,

#### High hopes

Next day, DPM warily approached King DP who was pointedly swinging a large boot-encased leg. "Sire," he reported, "I am well, thanks to Di."

Reveries were now flowing as would-be tourists. The Thomas Cook database had also been intercepted and the Royal Palace was on the package tour list.

The team was now working on Electronic Fund Transfer and there were high hopes that shortly some funds (electronic or otherwise) would be transferred to the Ducal coffers.

Good news, said King DP. "As a gesture, I'll rescind the information tax and allocate funds for purchasing a new telex machine. In the meantime, we would personally reward Di. Have her report to the new team."

One again, the moral of the Christmas Database is clear. Those who offer a helping hand are likely to end up chastened.

#### Measured tone

Of course, all this did not help the DP team who were working in a D and A (down and out) mode. Once again, our hero the DPM approached the royal ruler.

In a measured tone, he informed the King that the whole DP system was about to do down the tube.

The timing was unfortunate as a new computerised tax system was about to be announced. This involved a special levy on all types of printed and design information, whether TV programmes, cornflake packages or posters.

DPM was advised to keep his tapes spinning or face the alternative, a well-placed Ducal boot. This being a practical database, there was no magic slipper, bean or fairy godmother to hand.

As in all well-structured databases, help was at hand. Secretary Di, whose talents were more noted in such areas as the site storehouse and archives, started all present by saying she had an idea.

Apparently, she had heard of a successful attempt to interface with a giant banking computer network. All that was required was a second-hand telex plus some luck.

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## Builder's £25,000 program rewrite nightmare

THE computer nightmare of small business — an enforced upgrade entailing expensive custom software rewriting — faces Hertfordshire builders Northover Bros. A suite of programs costing £2,500 only four years ago may have to be rewritten at a likely price of £25,000.

Company secretary John Wilson says the firm bought its Kienzle 6000 as something of an innovation seven years ago but deteriorating hardware means it must be replaced.

"The Kienzle was bought from Northampton-based distributor MBM which went bankrupt and was taken over by Systime in January 1979. Although Systime maintained a previous service contract for a short while, the firm gave notice of termination later.

Wilson recognises that Northover, with a £500,000 annual turnover, needs to buy a more sophisticated machine, possibly with multi-programming and distributed data processing.

But there is a major complication as MBM also supplied the software written in Assembler and Wilson envisages: "The frightening prospect of having to rewrite to a new machine."

The original software worked very well, giving Northover contracting and costing routines complete with proper audit trail.

"We need a system of accounting that the customer can understand," says Wilson.

"It is so use having a total figure, or an indecipherable string of characters. All our

invoices must be broken down into items, so that if it comes to a dispute we know exactly what we're talking about."

Northover won a court case against a customer trying to evade payment through such itemisation. Wilson observes: "Several other builders who didn't have our chapter and verse came untrussed and lost a packet."

Wilson approached Systime in May 1979 and suggested a program rewrite but the company was prepared only to offer him financial packages — payroll and similar items.

Wilson has also been round most of the exhibitions and seen the larger companies like IBM, ICL and Burroughs.

"We are in a rather unusual position at

Northover," says Wilson. "We deal with small numbers of very complex records — just the sort of thing they say not to computerise. But our previous package worked so well that I could extract a simultaneous invoice and costing record in seconds. And that's what I'm looking for again."

His best leads to date have stemmed from last month's Compe, where he renewed contact with Systime.

Whichever way he looks, Wilson's Kienzle replacement will cost him too much. "The building business is wide open to computers," he says firmly. "But the computer industry will have to pull itself together if it is to serve companies like ours."

## H-P uptime guarantee but not for UK

IN THE US and the rest of Europe an important part of the sales pitch on Hewlett-Packard's new Series 44 HP3000 minicomputer is an option to insure for 99% uptime. But a similar guarantee is not to be offered in the UK.

The UK's western area computer manager, Mario Davey, says: "We would like to wait some months, before launching our fact. Maybe we're taking too conservative a stance, but we need a little more experience with remote diagnostics over PO lines."

However, Heinz Blasser, general manager of computer marketing responsible for European sales and support as a whole, says: "Our intention is to provide the same level of service on our side of the Atlantic as is provided in the States." He will decentralise regional support centres to bring remote diagnostics as close to the customer as possible.

The insurance (or guarantee as Blasser calls it), where available, will cover CPU, main memory and discs and will be priced at less than 10% over the overall purchase price.

It depends on customers meeting several conditions: A representative must remain on site while any repairs are carried out; an operator will have to have been sent on an HP training course; and there will have to be PO approval for modem connections. The scheme will operate in the US from February 1, 1981.

Increased confidence in the Series 44 is based on several hardware improvements. These include a reduced chip count on memory boards and a control and maintenance microcomputer system mounted in the 44's power case. Based on an in-house 16-bit micro known as the MCS, it selects the CPU and provides remote diagnostics through HP's Remote System Verification Program, RSVP.

## Banks look to a mix of telecoms and computers

BANKS are looking increasingly to a mixture of telecommunications and computers to solve the problem of moving money around.

This emerged when over 90 bankers from 14 countries gathered for a recent Infotech conference in London to consider the state of the art in relation to electronic fund transfers and to take a cautious peep into future developments.

Logica's commercial division manager, Chris Rees, established a conference keynote when he described banks as "pioneers in the computer networking field... often despite themselves".

Rees said that banks predicted in the late 1960s "significant business growth coupled with continuing wage inflation."

As banks are labour-intensive, this growth would be both costly and unprofitable to support.

The computer industry was available with hardware and software technology to support major networks, using existing PTT-supplied voice grade lines.

International Swift, Chips and Fedware developed from that initial point in the United States, Idaho being developed in Scandinavia.

Stephen Earnst, from the Bank of America, explained that 94% of American households possess cheque book accounts, a total of 37.1 billion cheques being written in the US this year. This volume posed enormous problems for American clearing banks.

### Ubiquitous

So far, there are 32 different American automated clearing houses and the ubiquitous credit card, by producing all these payment authorisations, increased rather than diminished paperwork.

It might appear like a paperless society to the consumer, but people in the rear offices of banks saw the outcome as a paperwork society.

Summarising, Earnst envisaged an increasing effort by American



EARNST... Paperless society becomes the paperwork society.

banks to introduce truncated cheque handling techniques which he foresaw as maintaining a dominant position as a method of payments for some time to come.

A point emerging clearly both from the conference hall and from activity within the industry as a whole was that banks will form the second largest market for computer equipment over the next decade.

Most of that money will be spent on networks connected with electronic fund transfer.

## Univac extends V77 mini range

FURTHER emphasis on distributed processing can be expected from Sperry Univac after the announcement this week of two new models in its V77 minicomputer range.

The V77-500 and V77-700 are aimed primarily at the distributed processing market, which minicomputer operations manager Peter Robinson estimates is growing at between 30 and 40% a year.

The two new models slot into the 200/400/600/800 range, offering a performance increase of about 30% over the next model down, according to Univac.

They compete with the DEC PDP-11/34 and Data General Eclipse C/150 in the case of the model 500, and with the PDP 11/44, Eclipse C/350 and

Honeywell Level 6/43 in the case of the model 700. Univac hopes to boost OEM sales with the two new models.

The 16-bit machines have one and two megabyte memories with optional writable control store of 2K words (48 bits per word). Memory cycle time is 750 and 600 nanoseconds respectively. The model 700 also has the option of a floating point processor to accelerate execution of Fortran programs.

All machines in the V77 range are fully software compatible and allow field upgrading. They are also compatible with Univac's networking software, including transaction processing and database systems and the company's distributed communications architecture for packet switching interfaces.

The two new machines join the Vortex II operating system common to the V77 range.

Since moving into minicomputers with the takeover of US minimaker Varian Data Systems in 1977, the US and British arms of Univac have taken different marketing routes. The concentration in the US has been on the OEM market while the UK company focused on multiple sales on the back of its existing mainframe user base.

The UK minicomputer division is more profitable than its US counterpart as a result, says Robinson.

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## MP gains time for Info Bill

BACKBENCH MP Frank Hooley (Lab, Sheffield Hedley) is reviving the push for a Freedom of Information law by adopting the Outer Circle Policy Unit's draft Bill, similar to that proposed by Clement Freud and lost at the General Election.

Hooley has won third place in the ballot for private members' Bills and has an outside chance of gaining adequate parliamentary time.

A Freedom of Information Act would force the Civil Service to reveal all government files for public view, with certain specific exceptions dealing with law enforcement and the privacy of third parties. The new Bill differs from Freud's (CW, April 5, 1979) mainly in a clause giving data subjects the right of appeal to the ombudsman over errors in files and revamping the second part, which replaces the existing Official Secrets Act.

This latter is modelled on the Conservative government's own proposals but with reduced coverage and power given to courts instead of ministers.

## US 'right to know' policy looks safe

THE faltering steps which have marked US progress towards a national information policy look reasonably certain of continuing when Ronald Reagan's administration takes office next month.

This prediction appears reasonable despite the departure of National Telecommunications and Information Administration head Henry Geller and his deputy Ed Zimmerman.

There is no present indication of their replacements but Republican reaction in Congress to the NTIA's recent telecommunications and privacy bills has been positive and leads Geller to believe there will be continuity of policy.

It is normal United States practice for agency heads and their deputies to be replaced when the presidency changes, even with organisations as small by US standards as the NTIA with 325 staff.

In any case, Geller is well known as a liberal Democrat and admits that "there has not been a lot of

concrete action" towards constructing a national information policy along the lines he set out two years ago (CW, February 15, 1979).

Exceptions to this general rule lie in the fields of privacy and regulation of telecommunications. There are now five unfinished privacy Bills pending, four dealing with records — insurance, medicine, Federal health research and electronic funds transfer.

Termed the Fair Information Privacy Practices Bill, the fifth would greatly extend the provisions of existing credit laws to cover cheque authorisation and compel provision of more readily obtainable information to the consumer.

The NTIA's Communications Bill was intended to tackle problems caused by converging technology, such as AT&T cross-subsidising data processing services, and to promote competition.

A ways by training, Geller believes passionately in the need to protect individuals from the effects of advancing technology and to "redress the balance," an issue he hopes to pursue in a future academic career.



THESE operators all work for Barclays Bank. They were removed from their usual surroundings to help farmers visiting the annual Smithfield Show last week work out the profit and loss on their machinery leasing and farming operations. The farm financial models were run in real time at the show from IBM's CALL service in Basingstoke, London. Over 700 farmers used the service during the four-day show.

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## Atkins-LUCS merger completed

A CAUTIOUS approach to expansion in the rest of Europe is being adopted by United Computing.

This is the name just announced for the organisation that combines the forces of London United Computing Systems and Atkins On-Line, a computing services group.

Atkins On-Line and LUCS were brought together in 1979 when the LUCS parent company in the US, United Telecom of Kansas City, took over Atkins' parent, On-Line Systems of Pittsburgh.

Denola Chandler, managing director of United Computing, regards the acquisition as a takeover in reverse as far as the UK is concerned because five out of the six members of the United Computing

board are former Atkins On-Line executives. Chandler himself was managing director.

The board is currently based at the former Atkins On-Line centre at Epsom, although a move to the former LUCS offices at Leonard Street in the City is being considered.

United Computing provides about 10% of the turnover of United Information Systems, the organisation that embraces all the data processing interests of United Telecom. They include Kansas City-based United Computing Systems, which runs a Cray.

The Cray can be accessed via the UK operation, substantially strengthening its already prominent position in the engineering computer services business.

## UK data protection laws delayed

PRESSURE of other work has made it unlikely that the House of Commons will make immediate moves towards implementing data protection laws, despite pressure from the Council of Europe.

The select Committee on Home Affairs has noted the time Home Office officials spent considering the Lindop Report on Data Protection but has not had a chance to investigate the issues, committee chairman Sir Graham Page (Con, Crosby) told Computer Weekly.

Lindop is only one of several reports surveyed in the committee's Report on Home Office Reports published on December 10.

"According to Page, the committee will be occupied fully until the

new year with penal issues and has not decided on its next investigation.

Home Secretary William Whitelaw has promised a pre-Christmas statement and the government seems reconciled to meeting the Council of Europe requirements embodied in the latter's data protection convention.

A Home Office proposal for a Data Protection Bill is understood to be under consideration by the government. Details are not known, except that, as expected, they do not involve the setting up of a Data Protection Authority.

"There is doubt in some civil servants' minds whether the proposals would satisfy the requirements of the Council of Europe.

"According to Page, the committee will be occupied fully until the

## Time-slot service extended

TIME-SLOT, the personal information service, has been extended and linked to a payroll service. For an introductory period, Croydon-based Peter Merrick Associates is offering the service for £60 per hour a week depending on

the number of employees. The payroll service is extra. The offer includes unlimited access to the customer's own information database held on the Time-Slot 1000, and supply of a VDU and printer at his own site.

## Prestel printing trial

THE paper and printing industries are to use one of the electronic media which may eventually see them off. This month Prestel terminals from Radio Rentals are to be installed at 50 paper merchants and 50 printing

firms in a two-month trial sponsored by the magazine Paper Facts and Figures. The magazine's database on Prestel shows price changes, stock levels and clearance offers for paper and board products.

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expansion in creating staff vacancies at all levels including senior consultants in computing and office automation, project managers, systems analysts, designers and programmers.

If you would like to know more about Langton, please contact Ian Burton.

Langton Information Systems Limited, 143 Oxford Street, London W1R 1LD. Tel: 01-439 0166.

## Lisp software launch

LISP software, with processors designed specifically to run it, is to be launched early next year by two new Los Angeles companies, Symbolics and Lisp Machines Inc.

Control Data is to be an early customer for two machines from LMI and wants to invest in the company. Texas Instruments is also buying two machines.

Lisp is said to make efficient use of processor power and to be good

for manipulating large quantities of information, such as are used in geological analysis, genetic engineering and integrated circuit design, but it has previously needed a large mainframe to run in.

LMI's first machines are priced at \$160,000 including the operating system — the price of a large mini — and it plans to halve the price over the next 18 months while at the same time tripling their power.

## Training for sales career

INSIGHT Marketing and Personnel Consultants, IMPC, the London-based sales and marketing recruitment agency, is starting a monthly series of one-week residential training courses. Catering for existing computer staff wishing to become salespeople, the first course will start on January 19 at Olivetti's training centre in Heston.

Groups containing up to 12 students will be placed in jobs prior to attending the course, the cost of which will be absorbed into IMPC's standard recruiting fees.

"The course is designed to bridge the gap between people who want to sell and companies who want sales people."

A SCHEME to save £50,000 a year by reducing drug stocks was due to be discussed by Coventry Area Health Authority on Tuesday.

Supporters of the stock control and drugs "library" scheme claim that a one-off saving of £50,000 could be made and later, savings of £50,000-£70,000 a year.

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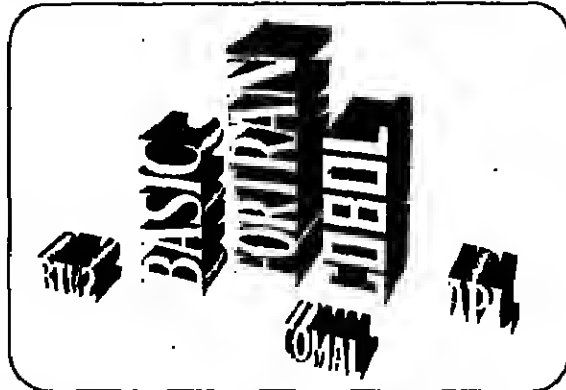
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## SOFTWARE FILE



## MINORITY LANGUAGES

Any programmer looking for an up-and-coming language to learn, or DP manager considering a new tool for a particular job, is faced with a bewildering variety. A range of specialist and general-purpose languages has grown up to match new skills and refine old ones, as the computer infiltrates ever-widening spheres of application.

Commercially, Cobol, Basic, Fortran, and more recently Pascal still rule, but their heirs are to be found in a new generation which builds on the lessons learnt in the last 15 years. In this and the next two issues, Software File will be sampling a few of these "minority languages" and handing over to experts in them to explain their particular charms and virtues.

This week JOHN BARNES, who originally invented RTL/2 to cope with real time processes, explains the background and uses of the language.

John Barnes is director of language research at SPL's Abingdon Research Centre and a member of the Language Design Team involved in the new US defence language Ada.

## RTL/2 — born of the falling price of hardware

DURING the 70s the price of hardware has fallen dramatically and as a result there has been an explosion in the demand for software. This demand was foreseen at ICI, and a five-year project started in 1969 resulted in the birth of RTL/2, a high-level programming language suited to process control and similar embedded applications.

A prototype, naturally known as RTL/1, was in use in 1970. Based upon Algol 60 but with several additional features including a mechanism for the online replacement of program sections, it was appropriate to a then popular con-

figuration of 48K words and a megabyte of fixed disc or drum.

Experience from the use of RTL/1 was fed into the design of RTL/2. Perhaps the biggest item of input was that the range of target configurations had changed dramatically; down to 8K core-only machines.

It seemed that the falling price of hardware had in the main opened up opportunities for new small applications rather than the more lavish use of hardware in existing fields of use. As a consequence RTL/2 is very different from RTL/1.

The first draft definition of

RTL/2 was written in January 1971. A bootstrap compiler (for the ICL System 4) was written in RTL/1. Production quality compilers for the System 4 and PDP-11 were then written in RTL/2 and made available for general use throughout ICI in July 1972.

These were constructed using the now familiar root compiler technique. Both contain a common front-end which converts RTL/2 into the same abstract intermediate language; this is then followed by a back end or code generator which converts the intermediate language into the appropriate object code.

This technique simplifies compiler portability and helps to ensure that implementations differ as little as possible.

These two early compilers both ran on the System 4. The compiler for the PDP-11 was a cross-compiler from which the object programs had to be transferred onto the PDP-11 on yards and yards of paper tape, the target machines being far too small to support a compiler.

The language was changed very slightly during 1972 and 1973 in order to remove dead wood and reduce the compiler size. It was frozen at the end of 1973. During this period some 20 process control applications were programmed in RTL/2. This also required the writing of a range of operating systems known as MTS, themselves written in RTL/2. All the target machines were PDP-11s; the System 4 and various IBM 360/370s were used for cross-compilation.

### Control

The success of RTL/2 in ICI resulted in its being made commercially available through SPL International in April 1974, and since then it has gone from strength to strength. More than 20 new implementations have been written, and without exception all have incorporated the same standard front-end. In addition, support packages have been developed so that the object program can be run under various operating systems. In the case of the ever popular PDP-11, most users run RTL/2 under RSX-11M.

Perhaps one of the most important technical aspects of RTL/2 is that it recognises the need for features aimed at programming in the large. It allows a program to be developed in individual separately compiled modules and gives the user control over visibility between the modules.

The implementations also allow these interfaces to be checked so that, for example, a procedure with two parameters in one module is not called with only one parameter from another module. In these respects RTL/2 is far superior to Pascal, which was designed as a teaching tool and is really only suitable for small programs.

At a lower level, RTL/2 provides an appropriate range of data types and structures. The basic types include bytes (of characters), integers, fractions (for fixed point machines) and reals. Data structures include arrays, records and typed references. The Algol 68 style record structures give RTL/2 a big advantage over its old rival Coral 66, with its ad hoc tables and dangerous anonymous references.

Other data types are aimed at giving the user control over error



Barnes

recovery (or exception handling, as young Ada calls it), I/O channel selection and task control. It goes without saying that being designed for real time applications, RTL/2 naturally supports multi-tasking. All code is read-only, local data is implemented on a stack and procedures are automatically re-entrant, provided they do not use global data.

As stated above RTL/2 is used for writing both application programs and system programs. The needs of these two areas are slightly different: system programs need more flexibility. To recognise this end in order to give management control, RTL/2 compiles have a facility whereby certain language features — for example, the ability to descend into machine code, to leave references uninitialised and to omit certain subscript range checks — are not available to the application programmer.

The intention is that in the application mode, the constraints are such that all programs are inherently secure and cannot run wild, and this inherent security is an enormous benefit when first debugging a new program. Moreover, the overheads involved are very low and can be allowed in a production program, thereby allowing the manager to sleep peacefully in the knowledge that errors in the software will be trapped.

RTL/2 is a very machine independent language. The only significant aspect which is not easily prescribed is that the range of integers depends on the word-length of the machine; even so, the standard dictates a minimum word-length of 16 bits.

### Portability

The portability of the language itself is enhanced by the existence of system standards for interfaces such as input/output and error recovery.

The use of RTL/2 is now spread over the globe, from Argentina in Sarawak and from Canada to Australia. Users include famous names such as Plessey, British Aerospace, Du Pont and Philips. Naturally, many users are in Western Europe, and there is a strong concentration in the Netherlands where the free market is not impeded by politically supported local products, such as Pearl in Germany. The uses include process control (for which it was designed), automation, order processing, communications and many others.

RTL/2 is now available on a wide range of machines including the PDP-11, VAX-11/780, Interdata 8/32, Philips P800, Hewlett-Packard HP1000, DEC VAX-11/780, ICL 2900, Intel 8080 and Motorola 6809. Of these, the PDP-11 still dominates with the VAX and various micros growing in importance.

The success of RTL/2 can be attributed to two factors: its portability and commercial support.

A long period of stability is now expected, with growth of use not only on traditional minicomputers but also on new microcomputers.

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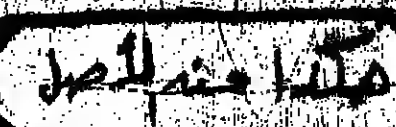
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# DEC deal sought by Floating Point

by Keith Jones  
WITH about 60% of its European customer base comprising digital equipment users, array processor manufacturer Floating Point Systems is looking at a possible joint marketing agreement with DEC, similar to cooperation existing already between the two companies in the United States.

There is no contractual relationship but the companies exchange confidential information and DEC promotes actively the FPS processors interfacing with its PDP-11 and VAX machines.

This close co-operation exists only between FPS and DEC's Laboratory Data Products division, the latter interested primarily

in the smaller FPS processors with 32-bit floating point formats. FPS hopes to forge a similar agreement with DEC's Engineering Services Group which markets the 32-bit VAX 11/780. FPS offers attachment of its model 164 array processor which features a 64-bit floating point format.

FPS continues to sell its machines to users of the wide range of other host computers, both microcomputers and mainframes, with which they can interface.

The UK-based FPS operation at Bracknell has picked up more than 100 British, Dutch and Scandinavian customers with applications areas including image processing,

aircraft simulation, seismic services, radar, sonar processing and structural analysis.

Apart from DEC, commonly used hosts include machines from Prime, Systems Engineering Laboratories and Perkin Elmer.

EPS machines employ a pipelined architecture resembling the design of the Cray Research and Control Data vector processors rather than parallel processors, like the ICL Distributed Array Processor.

DAP is a Single Instruction Multiple Data machine where one instruction is duplicated per microprocessor in a two-dimensional array, multiple data items being processed in parallel.

## Intel fights pirates with CAD

LEADING US microelectronics company Intel is to incorporate computer-aided design techniques into its chip redesign programmes in an attempt to combat the market squeezing of plagiarists.

The company receives less than half the turnover involved in its single chip 8-bit microcomputer, the 8080, although it accounts for more than half the 8-bit market. The rest goes to about a dozen companies which have copied the chip without a second source agreement.

Intel considers that CAD will speed up the redesign and improvement of its chips and reduce the cost, enabling the company to keep a lead over plagiarists and other competitors.

Intel has devoted about 10 per cent of its total research and development budget (9 million) to CAD.

Manual redesigns normally take up to a year and cost between \$500,000 and \$1 million; using CAD this can be reduced to six months and \$50,000.

In the conversion of single chip 8-bit microcomputers - the 8048 and 8049, the 8085 8-bit microprocessor and 8086 16-bit microprocessor - to CMOS technology, Intel claims to have saved between \$1½ million and \$2 million and to have gained six months on the competition.

Particularly good at plagiarism are the Japanese companies which tend to wait until the smaller, faster and cheaper versions are on the market before they go ahead and copy.

## 'Future Shock' to affect DP dept first

THE DP department is a company within a company which should prepare now for the drastic structural changes to be brought about by new technology - one of the first examples of "Future Shock".

This was the message put over by US consultants Dick Nolan and Dave Norton at the first major lec-

ture event staged in London by their firm, Nolan, Norton and Co, which opened offices here in July.

The Boston-based consultancy was established by Nolan and Norton in 1975 when they gave up lecturing at the Harvard Business School.

They now employ 75 professional consultants and claim to be

one of the few big firms in the business to have concentrated on computer management consultancy from the start.

Company chairman Dick Nolan believes that his firm has the best DP management library in the world.

Addressing an audience of senior DP managers at the Tower



Micro Computer Centre chief engineer Malcolm North checks out an alling Pet at his company's Sheen headquarters.

## Sheen-style micro boom

CYRIL GRANT, founder of the Micro Computer Centre which has moved to larger premises in Sheen Lane, London SW4, told Computer Weekly that company turnover had risen by 200% this year.

"We did £280,000 worth of business last year and this year the figure has risen to £750,000," he explained.

The centre was established 20 months ago and employs a current staff of 24, including six programmers and three engineers.

Micro Computer Centre offers a wide range of microcomputer services, including packaged programs, customer-oriented systems and maintenance plus

hardware. In the words of Grant, the centre "aims to meet the needs of local businessmen" within a 50-mile radius of Sheen.

Customers include a local fish and chip shop and wine merchant and the company's maintenance service is claimed to react to customer machine problems within five minutes.

The company will extend its activities by starting a micro school both for computer students and business people. Three one-day seminars will be held on January 7, February 11 and March 11.

Micro Computer Centre's telephone number is 01-878 7044.

## UK needs a govt micro policy, says report

THE UK is weak in 1-2 micron bipolar and MOS technology and will need experience with advanced wafer printers and electron beam equipment in order to be able to meet industry demands in four to five years' time.

This was one of the main conclusions in a microelectronics industry progress report compiled by the electronics components working party of the National Economic Development Office. The working party is chaired by Eric Hammond, executive councillor of the Electrical, Electronic, Telecommunications and Plumbing Union.

The report highlights the lack of a UK microelectronics policy by criticising the lack of government support on microelectronics applications, and in the production of customised circuits.

This could eventually endanger the UK industry because of the imbalance between UK-owned and foreign semiconductor plants. The report recommended that the government should increase the limit of support from 25% to 35% of project investment and extend the original deadline of 1984 for the Microelectronics Industry Support Programme.

The report went on to say that the industry's infrastructure is becoming weaker; for example, there is no UK optical lithographic equipment.

If the forecast production of standard integrated circuits in the UK is reached there could be an adequate market for a UK silicon crystal growing company by 1985, stated the report.

The report comes at a time when Immos, the sole UK microelectronics venture, is at the stage of ordering such advanced equipment for its first semiconductor plant, under construction in Newport, Gwent.

On the technology side, Royal and General Instrument Microelectronics have recently announced a joint venture, which will involve production of silicon gate CMOS devices at 2.3 micron dimensions over the next two or three years.

## Catching crooks

MATCHING fingerprints at the scene of a crime with those of known criminals on file should be much easier with a computer system developed by Logica, now under consideration by Scotland Yard.

A pattern recognition program allows photographs of fingerprints to be scanned automatically to find out from the file whose prints they are.

Poor quality prints need to be encoded by hand, after which they can be fed into the system and matched in the file. Whether the police will agree to buy Logica's system is not yet decided, but if they do the Home Office's array processor made by Floating Point Systems will be used.

The management of data as opposed to money, people or materials, involved dealing with the greatest impact on the rest of the organisation.

BT approval for Sematrans EYE Business Communications of Cambridge, part of Philips, has won British Telecom approval for its 2,400 bps two-wire full-duplex 2424 Sematrans modem.

This is claimed to be the first such modem to gain British Telecom approval and means that full duplex transmission may be carried out over an ordinary dialled telephone connection.

The modem uses echo cancellation to achieve this with standard synchronous communication, asynchronous being optional.

A range of Philips modems, covering speeds from 300 to 2400 bps, is also available.

## MICRO NEWS

# Texas prepares turn-of-year software launch

THE first additions to Texas Instruments' component software library and the Amplus software development system will be available from TI distributors later this month and in early January respectively.

A concept originated by TI in an attempt to combat the software crisis (CW, August 14), component software offers the 9900 family user a library of real time, concurrent software packages which can be used continuously for a fixed annual sum. The first two packages released a month ago, the real time executive (RTE) and file manager, form the heart of the concept.

The five new products include an EIA (Electronic Industry Association) communications package, an HDLC (high-level data link control) communications package, a Math pack, a data pack and a file I/O pack.

All are configurable, that is they are modularly structured so that the user can select only those features relevant to his application.

## Payment

He does this with the help of Amplus, and then takes the sections required from the disc, blowing them into EPROMs, again with the help of Amplus.

The whole concept has been designed by TI as a way of overcoming increasing software costs.

TI predicts that the cost of developing software for a system will be around 90% of total development costs by 1985.

TI has developed an interesting way of charging for its component software, which differs from current methods. It is supplied on disc as a source and object routine library, with documentation copyrighted and supplied under licence by TI.

An initial one-year licence fee of around £1,000 covers in-house software use or manufacture and sale of products. TI does not in-

crease the price of the software components.

Component software can be implemented with any hardware bus although TI has introduced simultaneously the E-bus and hardware modules which correspond to, and work with, the software components.

For example, the TM 990/303 floppy disc controller board goes with the file manager package. This should be available on Eurocard next year using the 9909 device.

## Bubble file

TI hopes to introduce a bubble file manager system which could be provided as an update to the file manager package.

The EIA communications package can communicate with other processor systems and works with the 9902/307 datacom board.

HDLC communications packages support communication with different processor systems, including miniframes and programmable controllers, working with 9903/308 boards.

TI hopes that the E-bus will become a standard because of the small number of pins involved - 64 compared with Motorola's 140. It can take single and double Eurocards and comprises 16-bit data bus.

The company will provide main boards and marketing specific application boards for a user making them.

Math packs, data packs and file I/O packs all assist the assembly language Rx user. The first comprises complete ranges of arithmetic and trigonometric functions, the second set of other operations like signed arithmetic, string compare and array manipulation.

File I/O packs provide device independent routines between the user application and component software subsystems, enabling software to be written independent of the device with which it will interface in general form.

Component software and the Rx software bus were designed to operate with any of the 16-bit 9900 family of microprocessors including the latest, the 9995 (CW, November 13) which has on-chip RAM and was designed in Bedford. According to MOS and Systems divisional head Peter Van Cuylenburg, the 9995 is just the start of a new generation of devices originating from the Bedford plant.

## New version

"A lot will be happening in the next year," Van Cuylenburg said, more or less confirming speculation that TI plans to produce a new version of the 9900 family in February.

Amplus is a TI software development system for the component software concept and it enables the user to modify standard software component packages.

Available in January, it will run all future software and can incorporate the Amplus circuit emulator, if required. It is menu driven and can carry out foreground and background executions simultaneously.

In-circuit emulator Amplus has been designed to support multiple emulators and can be used for debugging multiple processing systems.

It provides a high level block structured language in which custom command procedures can be

and test besides using the standard systems.

Microprocessor Pascal (MPP), TI's concurrent version of Pascal, will eventually be incorporated in Amplus. Rx combines with the MPP run time support system to form the Microprocessor Pascal Executive (MPX).

Pascal was chosen by TI primarily as a good design language and can be used either as design notation or as means of modelling and testing the function of the system on a host computer.

MPP can be used for syntax checking, documentation and testing.

TI is about to release MPP 3.0, a new version of Microprocessor Pascal, and the Rx-bug, a debugger based on the software real time executive.



COMMODORE has developed this modem facility for the Pet, which conforms to the recommendations used by the world's telecommunications administrations. The project is still in development and no release date has been set.

## Motorola 64K EPROM in UK

THE Motorola 64K EPROM is now available in the UK from its UK distributor, Jermyn of Sevenparks, Kent. Designated the MCM 68764, it features an auto-

matic power down mode to save power dissipation during standby operation, and has a maximum access time of either 350 or 450 nanoseconds.

## CP/M floppy disc for Nascoms

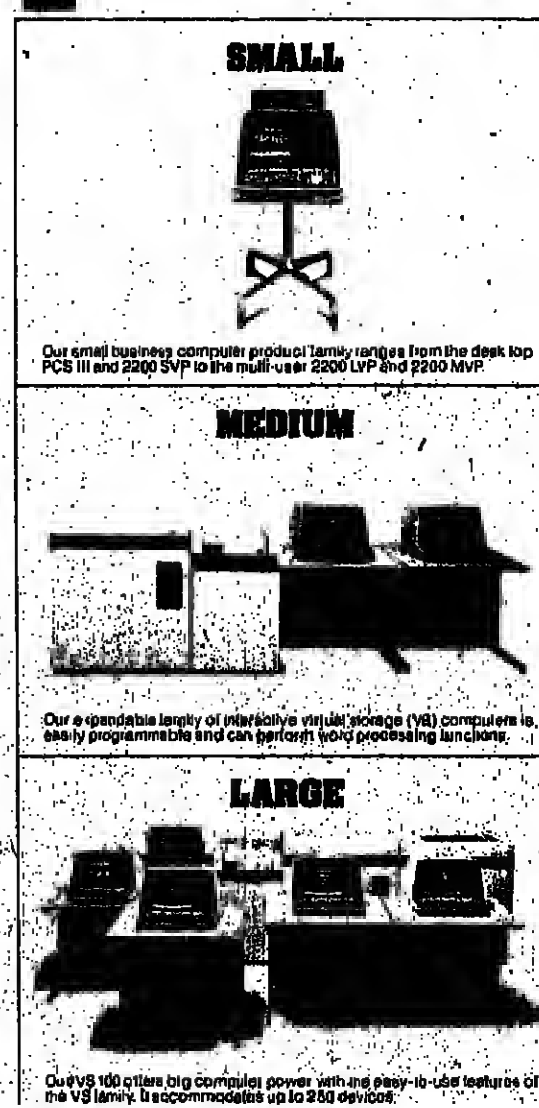
GEMINI Microcomputers, the company founded earlier this year by ex-Nascom boss John Marshall, has made a CP/M floppy disc system available for the Nascom 1 and 2 microcomputers.

The floppy disc controller can support three drives, although the CP/M system uses only one or two double-sided single density five-inch drives giving 160K of storage per drive.

Existing Nas-Sys software can be used on the disc system without CP/M, called the D-DOS system. It can be available through seven newly-formed Gemini dealers situated in the Midlands, Surrey, the North-West, Bristol and London areas.

A CP/M single drive system for the Nascom 1 is priced at £460 plus VAT and for the Nascom 2 at £450 plus VAT. The double drive costs £650 and £640 plus VAT respectively. D-DOS single drive for either system is available for £395 plus VAT.

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## OP SPOT

# Ops who chase the bankrolls of millionaires

THE Chase Manhattan bank deals with millionaires, large corporations, and other banks and an account there would say more about you than a wallet stuffed with American Express cards. Its City of London headquarters at Woodgate House is decidedly unimpressive and not entering the place you know you are in a hushed circle of corporation land.

In the computer room on the eighth floor, life is more liberal and the atmosphere less intimidating. A slight feeling of panic may be engendered by the fact that all the proliferating hardware has just been moved to the same floor, having migrated from the first and tenth floors.

The move is part of a general centralisation of staff and facilities within London, and Chase shared Woodgate House with National Westminster until last year.

## Hectic activity

Since then, the entire organisation has been involved in what is known as "restructuring" the building. Eventually, all 1,100 of Chase's UK employees will be working there.

"Restructuring" meant a month of hectic activity for the computer department preceded by 18 months of planning. Operations manager Jim Oates says: "We recognised from the beginning that the operations department would benefit from being closely involved with the move."

To that end, Clive Stamp was appointed operations supervisor with a brief to handle consultations with other bank departments and ensure that all details of the move were anticipated properly.

Stamp started with Chase as an operator on the Burroughs 3500 which lived on the tenth floor before being phased out two years ago.

The move itself took place over four weekends commencing on October 17 and it involved processors from four manufacturers: IBM, DEC, Vencak and Wang.

There is such a proliferation of kit on site because many of the

development and the buying decisions happen in the States. Production control co-ordinator Peter Wood adds: "It is not a good idea to be locked to one vendor."

The new computer room houses a 4-megabyte IBM 3031 running under VM OS/VS1 and CICS with mass storage handled by 16 3330 discs and a couple of 3350s.

DEC hardware comprises three PDP 11/70s for data capture and a PDP 11/34. Finally, there is a Vencak minicomputer and two Wang word processors.

The 3031 is used for programmer online tasks during office hours and then for batch work and the 11/70s are linked to some 120 terminals within the bank to capture individual transactions as they are made.

At the end of the bank working day, data is spooled on 10 to 15 tapes and fed to the 3031 for overnight processing with master files updated enabling reports to be produced for the following morning.

## Baby-sitting

The 11/34 is viewed best as a sophisticated word processor and Oates describes the ops role as "baby-sitting". It has a credit report link to New York and there are plans to extend links into Europe while the Vencak deals with money transfers.

The 3031, the 11/34s, Wang word processors and Vencak development kit were moved over the first weekend, the entire operation ending on November 8 when the 11/70 was installed into its new home.

Oates is proud that there was no break in service to the 48 bank user departments during the move. He says: "From my point of view it's obviously easier having everyone and everything on the same floor."

There are 24 people within the Chase ops department. Rohit Bidd is machine room supervisor who controls three distribution clerks, a punch girl, three shift leaders, three senior ops and six operators

with somewhat quirky shift arrangements.

Distribution clerks work from 3am until 11am controlling output handling, decollating reports and copying microfiche.

Since November 3, by the unanimous demand of the ops, the machine room has been run under a two 12-hour shift system for five days a week.

Ex-operator Peter Wood, who sees himself as an integral part of the ops department, supervises three operators and one junior. He oversees daily production work schedules, and his department prepares new applications working from programmer specs.

# All sides will profit when knocking the op stops

I HAVE received a letter from R. S. Small, chief operator with the Automobile Association in Basingstoke who reacted to my November 6 article in which I wrote about an op who had solved a problem in an ICL SMAC unit by thumbing the time switch.

He writes: "Your predecessor Bernard Allen seemed to be well aware of the ridiculous derogatory opinion that exists concerning the status, value and position of operators."

"I was extremely surprised, therefore, to find you promoting, by way of your column, an action which could only give ammunition to those holding this view."

"However, lighthearted the item was intended to be, it is likely to be misconstrued. The idea that all operators are limp-brained, button-pushing monkeys is, without doubt, completely wrong but the 'If it doesn't work, fump it' insinuation will not assist in disproving these theories."

"I respectfully suggest that you consider the implications of printing an apparently innocent

item and, in this case, promote 'If it doesn't work, fump it' rather than hating a harmless piece of equipment."

The point is taken, Mr Small, and thanks for writing. It is true that operators are subjected to derision and characterised as scruffy little computer kingdom.

When I told a friend I would write a weekly page for operators his advice was to keep the articles short and ensure that my copy remained monosyllabic.

However, during my three-month Op Spot operation I have found that ops are not the subnormal beings that I had been led to expect and that they lack the individual and collective pretentiousness rife in the computer industry.

One operator I met recently has a theory which sounds eminently plausible. He claimed that most computer people rarely enter a machine room and see an operator at work. Equally as frequently, the only times they meet are on their way to or from some ungodly shift or while they are relaxing during a

coffee break.

If relations have deteriorated dramatically the only time an op talks to programmers is to tell them to follow schedules they don't even understand.

On many occasions it is the programmers who are being stupid; perhaps ops should adopt a more aggressive attitude towards their detractors and stop tuning up inferiority complexes.

In defence of the article, it was true and related by an op, the only person I know who possesses the ability to finish the Guardian crossword puzzle with the clues upside down; I wouldn't dare doubt his intelligence.

## The very stuff of prejudice

HOW are operators selected for a job? Do ops managers look for a clutch of CSEs, time spent on a TOPS course or a doctorate in philosophy? Do they put their trust in aptitude tests, a track record or personal recommendations?

I overheard an ops manager saying recently: "What I look for is a bloke who can lift a heavy box of paper." This short but cautionary tale should bring joy to the hearts of all sexist who want to keep tape apes and printer monkeys dumb, messy and simian.

by Paul Fisher

## Stars and stripes illusions

FROM time to time an op smitten by wanderlust may contemplate a working trip to the United States, stimulated by diamonds as big as the Ritz or fantasies about breakfast at Tiffany's with Blondie.

Visions and expectations of riches beyond avarice may be bolstered further by reports of Texas ops posts with a house, car and manservant included in a superficially appealing package. Not so, according to New York-based consultant Phil Dorn, who has been working in DP on both sides of the Atlantic since 1959.

"US computer operators are regarded by management in the same way as lathe operators and often stay in their jobs for 25 years," claims Dorn.

"Operations in the States," he continued, "attracts a different level of person, one without career



Top of the Chase Manhattan operational team are (left to right) ops manager Jim Oates, computer ops co-ordinator Clive Stamp and production co-ordinator Peter Wood.



PHIL DORN... Cautionary words about US op prospects.

aspirations." Dorn claims there is more emphasis in the UK on steady career development and greater acceptance of progress.

In general, American management encourages long service by stimulating company loyalty and offering employees perks from the moment they join the company.

As an example of this technique, he quotes General Motors which gives all new employees discounts on company cars.

## PROGRAMMERS' PAGE

# David and Goliath may kill off the programmer

COBOL programmers beware — again. The latest threat to job security comes from Adam, David, Goliath and Tina (tiny Adam).

This biblical bevy of systems, designed to strike an insatiable chord all round the world, comes from the stable of Lomac, Logical Machine Corp, of Los Angeles. They are introduced to the UK by Beam Microwest of London, which claims to have cut out the whole of the middle-men of the DP department.

Anyone, they say — meaning the non-specialist — can sit down at the keyboard and in half an hour become fully operational.

"The idea," said J. P. Hillier of Beam, "is that the accountant or executive who knows the business backwards can interact directly with the computer. He doesn't have to work through the system analyst, with all the dangers of miscommunication; nor learn a complex programming language himself."

"A list of nouns and verbs in plain English is all you need to program your particular application according to your needs."

## Concentrated

Beam's claims should be moderated to "half an hour for someone with previous computing ex-

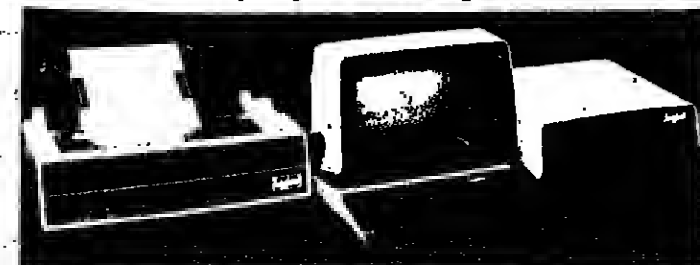
perience," but even the raw beginner should need only the 24 hours of classroom instruction supplied at the Beam Business Centre in Des Moines.

This can be spread over a week or condensed into three days to suit the customer. Beam prefers to keep each course dedicated to one company, so that its business methods can be concentrated upon, and recommends attendance by a maximum of three people. If this causes staff problems the courses can be staggered.

A further 26 hours of follow-up tuition, either at the customer's own premises, by telephone, or again at the Beam Centre, is available but not often used. I was told by training manager Helen Kearns. If not used, the time is kept in reserve in case of future problems.

## Challenged

Adam and his family can provide all the usual commercial applications — payroll, stock control, statistics, ledgers and the like. Additionally, Beam is offering special packages for hitherto neglected corners of the market. Just introduced in London, and already running successfully in France and Spain, is a package dealing with freight forwarding.



Tina is the desk-top model from the Lomac range. It can be programmed in plain English and uses a library of 1.28 million bytes' capacity bank. The intelligent printer produces 80 character lines at 87 per minute.

## New hope for disabled

IMAGINE being disabled, stuck at home and unable to get out even to work. Nice for a week, you may think, husting for a rest from everything, but imagine the growing sense of purposelessness and isolation from life.

Any training scheme that can be taken to the disabled will provide that stimulus and involvement that perks up their self-esteem and eventually improves overall health.

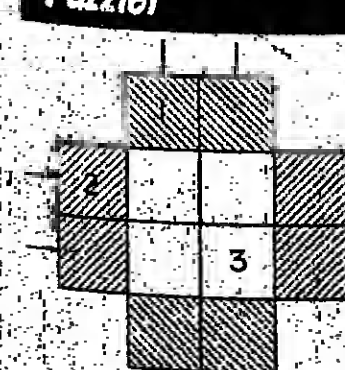
Two years ago Control Data Corp, a computer company based in Minneapolis, started its Homework project to train and employ in their own homes staff who had become disabled and who could no longer report to work. Now CDC has signed a contract

with Goodwill Industries of Atlanta to extend Homework outside the company to help the severely disabled become computer programmers.

The students will use Plato-system terminals installed in their homes and connected to a central computer in Minneapolis. Courses which are aimed at being specific to a language or skill will last from six months to one year, depending on the student's progress. This will be tracked by the computer and monitored by Homework program managers.

Managers and students can converse, about homework results perhaps, using the terminals' and attached keyboard.

## Puzzler

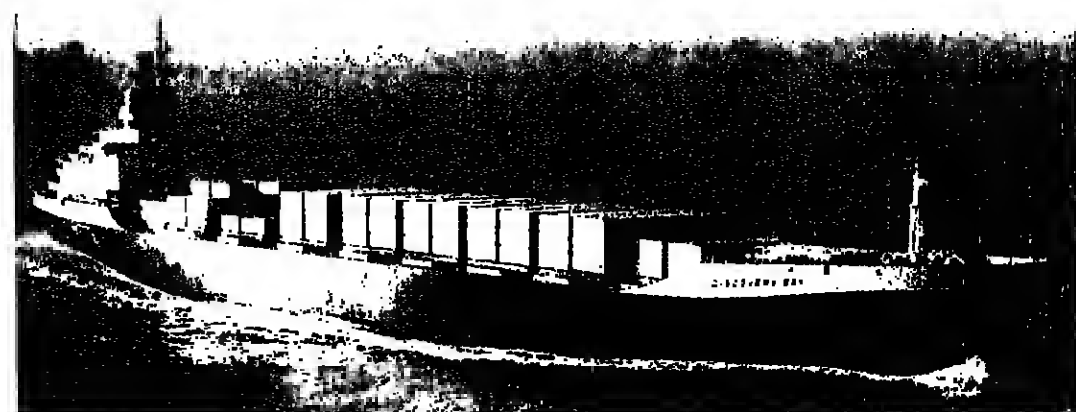


IN this variation on the conventional Magic Square, the problem is to fill in the nine vacant cells, using the numbers 4 to 12, in such

a way that (a) the four rows of four cells indicated by arrows, (b) the two differently shaded opposite-pairs of four cells each, and (c) the central group of four cells, all total to a constant of 26. To make the task more difficult, the first three digits in the 1 to 12 consecutive sequence have already been inserted in fixed positions.

See page 37 for solution. Referring back to the October 23 Puzzler, several readers have worked out another 26-stroke minimum round, using different optimum shot lengths of 75 and 175m. More details will be forwarded to interested parties on receipt of a stamped-addressed envelope.

by Pamela Rowe



The latest applications package available on the Lomac range is for freight forwarding. The system produces route costings, freight accounts, manifests and documentation, and reduces the problems of manual paper-moving.

his own requirements, without recourse to the expensive DP professional.

Tina and Adam both consist of a VDU with keyboard, disc drive, and attached printer. Tina (Tiny Adam) is the desk-top version and comes equipped with a vocabulary of 45 access words and 45 verbs. New words used by the system are automatically put into memory. Data and programs are stored on floppies, each containing 1.25 million bytes.

Adam has a bigger information store with one fixed and one interchangeable disc, joint capacity 10.6 million bytes. Adam can also be a good listener, an optional microphone allowing verbal commands to bypass the keyboard.

## Tribute

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## OP SPOT

## Ops who chase the bankrolls of millionaires

THE Chase Manhattan bank deals with millionaires, large corporations, and other banks and an account there would say more about you than a wallet stuffed with American Express cards. Its City of London headquarters at Wingate House is decidedly unimpressive and on entering the place you know you are in a hushed citadel of corporate power.

In the computer room on the eighth floor, life is more liberal and the atmosphere less intimidating. A slight feeling of panic may be engendered by the fact that all the proliferating hardware has just been moved to the same floor, having migrated from the first and tenth floors.

The move is part of a general centralisation of staff and facilities within London, and Chase shared Wingate House with National Westminster until last year.

## Hectic activity

Since then, the entire organisation has been involved in what is known as "restacking" the building. Eventually, all 1,100 of Chase's UK employees will be working there.

"Restacking" meant a month of hectic activity for the computer department preceded by 18 months of planning. Operations manager Jim Oates says: "We recognised from the beginning that the operations department would benefit from being closely involved with the move."

To that end, Clive Stamp was appointed operations supervisor with a brief to handle consultations with other bank departments and ensure that all details of the move were anticipated properly.

Stamp started with Chase as an operator on the Burroughs 3500 which lived on the tenth floor before being phased out two years ago.

The move itself took place over four weekends commencing on October 17 and it involved processors from four manufacturers: IBM, DEC, Vintek and Wang.

There is such a proliferation of kit on site because many of the

development and the buying decisions happen in the States. Production control co-ordinator Peter Wood adds: "It is not a good idea to be locked to one vendor."

The new computer room houses a 4-megabyte IBM 3031 running under VM OS/VS1 and CICs with mass storage handled by 16 3330 discs and a couple of 3350s.

DEC hardware comprises three PDP 11/70s for data capture and a PDP 11/34. Finally, there is a Vintek minicomputer and two Wang word processors.

The 3031 is used for programmer online tasks during office hours and then for batch work and the 11/70s are linked to some 120 terminals within the bank to capture individual transactions as they are made.

At the end of the bank working day, data is spooled on 10 to 15 tapes and fed in the 3031 for overnight processing with master files updated enabling reports to be produced for the following morning.

## Baby-sitting

The 11/34 is viewed best as a sophisticated word processor and Oates describes the ops role as "baby-sitting". It has a credit report link to New York and there are plans to extend links into Europe while the Vintek deals with money transfers.

The 3031, the 11/34s, Wang word processors and Vintek development kit were moved over the first weekend, the entire operation ending on November 8 when the 11/70 was installed into its new home.

Oates is proud that there was no break in service to the 48 bank users during the move. He says: "From my point of view it's obviously easier having everyone and everything on the same floor."

There are 24 people within the Chase ops department. Robt Bld is machine room supervisor who controls three distribution clerks, a punch girl, three shift leaders, three senior ops and six operators

with somewhat quirky shift arrangements.

Distribution clerks work from 3am until 11am controlling output handling, decollating reports and copying microfiche.

Since November 3, by the unanimous demand of the ops, the machine room has been run under a two 12-hour shift system for five days a week.

Ex-operator Peter Wood, who sees himself as an integral part of the ops department, supervises three operation analysts and one junior. He oversees daily production work schedules, and his department prepares new applications working from programmer specs.

## All sides will profit when knocking the op stops

I HAVE received a letter from R. S. Small, chief operator with the Automobile Association in Basingstoke who reacted to my November 6 article in which I wrote about an op who had solved a problem in an ICL SMAC unit by thumping the time switch.

He writes: "Your predecessor Bernard Alku seemed to be well aware of the ridiculous derogatory opinion that exists concerning the status, value and position of operators."

"I was extremely surprised, therefore, to find you promoting, by way of your column, an action which could only give ammunition to those holding this view."

"However lighthearted the item was intended to be, it is likely to be misconstrued. The idea that all operators are limp-brained, button-pushing monkeys is, without doubt, completely wrong but the 'If it doesn't work, bump it' insinuation will not assist in disproving these theories."

"I respectfully suggest that you consider the implications of printing an apparently innocent



Top of the Chase Manhattan operational tree are (left to right) ops manager Jim Oates, computer ops co-ordinator Clive Stamp and production co-ordinator Peter Wood.

by Paul Fisher

## Stars and stripes illusions

FROM time to time an op studies by wanderlust may contemplate a working trip to the United States, stimulated by diamonds as big as the Ritz or fantasies about breakfast at Tiffany's with Blondie.

Visions and expectations of riches beyond avarice may be bolstered further by reports of Texan ops posts with a house, car and manservant included in a superficially appealing package. Not so, according to New York-based consultant Phil Dorn, who has been working in DP on both sides of the Atlantic since 1959.

"US computer operators are regarded by management in the same way as lathes operators and often stay in their jobs for 25 years," claims Dorn.

"Operations in the States," he continued, "attracts a different level of person, one without career



PHIL DORN... Cautionary words about US op prospects.

aspirations." Dorn claims there is more emphasis in the UK on steady career development and greater acceptance of progress.

In general, American management encourages long service by stimulating company loyalty and offering employees perks from the moment they join the company.

As an example of this technique, he quotes General Motor which gives all new employees discounts on company cars.

## The very stuff of prejudice

HOW are operators selected for a job? Do ops managers look for a clutch of CSEs, (time spent on a TOPS course or a doctorate in philosophy)? Do they put their trust in aptitude tests, a track record or personal recommendations?

I overheard an ops manager saying recently: "What I look for is a bloke who can lift a heavy box of paper."

This short but cautionary tale should bring joy to the hearts of all sexists who want to keep tape aces and printer monkeys dumb, morose and similar.

## PROGRAMMERS' PAGE

## David and Goliath may kill off the programmer

COBOL programmers beware — again. The latest threat to 24 security comes from Adam, David, Goliath and Tina (tiny Adam).

This biblical bevy of systems, designed to strike an instant chord all round the world, comes from the stable of Lomac, Logical Machine Corp, of Los Angeles. They are introduced to the UK by Beam Microcomputing Ltd, London, which claims to have cut out the whole of the middle-men of the DP department.

Anyone, they say — meaning the non-specialist — can sit down at the keyboard and in half an hour become fully operational.

"The idea," said J. P. Hillier of Beam, "is that the accountant or executive who knows the business backwards can interact directly with the computer. He doesn't have to work through the system analyst, with all the dangers of miscommunication; nor learn a complex programming language himself."

"A list of nouns and verbs in plain English is all you need to program your particular application according to your needs."

## Concentrated

Beam's claims should be moderated to "half an hour for someone with previous computing ex-

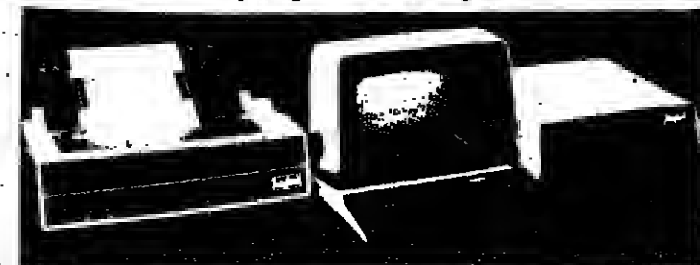
perience," but even the raw beginner should need only the 24 hours of classroom instruction supplied at the Beam 'Business Centre' to Dean Street.

This can be spread over a week or condensed into three days to suit the customer. Beam prefers to keep each course dedicated to one company, so that its business methods can be concentrated upon, and recommends attendance by a maximum of three people. If this causes staff problems the courses can be staggered.

A further 26 hours of follow-up tuition, either at the customer's own premises, by telephone, or again at the Beam Centre, is available but not often used, I was told by training manager Helen Keena. If not used, the time is kept in reserve in case of future problems.

## Challenged

Adam and his family can provide all the usual commercial applications — payroll, stock control, statistics, ledgers and the like. Additionally, Beam is offering special packages for hitherto neglected corners of the market. Just introduced in London, and already running successfully in France and Spain, is a package dealing with freight forwarding.



Tina is the desk-top model from the Lomac range. It can be programmed in plain English and uses 10 pages of 1.28 million bytes capacity each. The intelligent printer produces 60 character lines at 67 per minute.

## New hope for disabled

IMAGINE being disabled, stuck at home and unable to get out even to work. Nice for a week, you may think, but imagine the growing sense of purposelessness and isolation from life.

Any training scheme that can be taken to the disabled will provide that stimulus and involvement that perks up their self-esteem and eventually improves overall health.

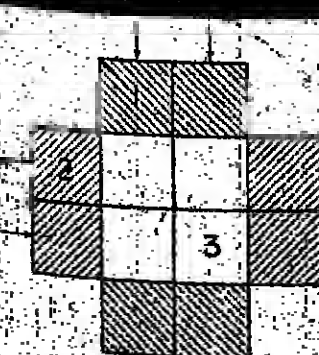
Two years ago Control Data Corp, a computer company based in Minneapolis, started its Homework project to train and employ in their own homes staff who had become disabled and who could no longer report to work.

Now CDC has signed a contract with Goodwill Industries of Atlanta to extend Homework outside the company to help the severely disabled become computer programmers.

The students will use Plato-system terminals installed in their homes and connected to a central computer in Minneapolis. Courses which are aimed at being specific to a language or skill will last from six months to one year, depending on the student's progress. This will be tracked by the computer and monitored by Homework program managers.

Managers and students can converse, about homework results perhaps, using the terminals and attached keyboard.

## Puzzler



In this variation on the conventional Magic Square, the problem is to fill in the nine vacant cells, using the numbers 4 to 12, in such

a way that (a) the four rows of four cells indicated by arrows, (b) the two differently shaded opposite-pairs of four cells each, and (c) the central group of four cells, all total to a constant of 26. To make the task more difficult, the first three digits in the 1 to 12 consecutive sequence have already been inserted in fixed positions.

See page 37 for solution. Referring back to the October 23 Puzzler, several readers have worked out another 26-stroke minimum route, using different optimum shot lengths of 75 and 175m. More details will be forwarded to interested parties on receipt of a stamped-addressed envelope.

by Pamela Rowe



The latest applications package available on the Lomac range is for freight forwarding. The system produces route costings, freight accounts, manifests and documentation, and reduces the problems of manual paper-moving.

his own requirements, without recourse to the expensive DP professional.

Tina and Adam both consist of a VDU with keyboard, disc drive, and attached printer. Tina (Tiny Adam) is the desk-top version and comes equipped with a vocabulary of 45 access words and 45 verbs.

New words used by the system are automatically put into memory. Data and programs are stored on floppies, each containing 1.25 million bytes.

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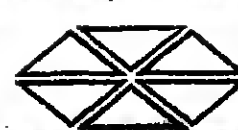
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# Appointments

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**International Personnel Consultants**  
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Technical, innovative and career orientated development.

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This company, part of a large international group, is engaged in the development of highly advanced simulation equipment and the design of measurement and control systems, including process control. All work is of a scientific/technical nature and the systems are PDP11 based, using RSX11 operating system with Macro 11.

Applicants for these senior posts must be educated to degree level and possess between two and four years PDP11, RSX11 and/or Macro experience with a total of five or six years in computing. Ideally, applicants should be under 35 years and have the necessary ability to work without supervision, run project teams and make a creative contribution to the company's products. Competitive salaries are offered together with full relocation package where necessary.

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Wonderful opportunity to live and work in Europe.

**Switzerland £16,000-£20,000 + full relocation**

One of the most advanced, long-term telephone system development projects is well underway. Involving several major multi-national companies, one of whom has requested Modus to recruit additional senior designers for the team. The vacancies will require residence in Switzerland for a minimum of two years.

Applicants must possess a degree and a working knowledge of German. Ideally, of course, at least two years experience in a telecomm environment is sought although a real-time network or message switching background will be considered. More senior candidates could be offered Project Management positions.

The company will provide full relocation and cover all medical expenses whilst in Switzerland.

## Cobol Programmers (18 months +)

Development of applications systems in a career orientated environment.

**Hampshire c. £7,500 + c. £1,500 benefits**

We seek good COBOL Programmers with at least eighteen months experience on any proprietary machine, either batch or real-time. Preference will be given to a background of commercial or financial applications.

Candidates must be prepared to commit themselves to a professional d.p. environment where the highest standards are expected. In return the company offers an outstanding career opportunity and the chance to utilise creative ability.

A very generous relocation package is offered. Modus will respond quickly to all applications and interviews will be held in London.

## Senior Support Consultant

Giving technical support to sales staff and controlling projects

**Surrey c. £12,000 p.a.**

We are seeking a real expert in real-time, process control systems development. This post will be a crucial one to our client, since the responsibilities covered by the individual appointed will be very wide ranging. They include giving in-depth technical support to the sales force, thus ensuring that the skills and capabilities within the company are utilized to the fullest extent, acting as Consultant to existing and future clients, and managing project teams both directly and indirectly. In the medium term, expectations are that the appointee will take part in the company management.

The company is a well established and steadily growing specialist consultancy and can offer long-term security and career progression for the right candidate. A company car may form part of the package if the right level of person is appointed.

Consultants: — Mike Creamer or Andy Wright  
If the advertised positions do not match your experience or aspirations, Mike and Andy are always available for a confidential discussion of the possibilities. An informal meeting — often an essential part of the process — can be quickly arranged.

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Developing new, software driven industrial control systems.

**Slough £7,500-£12,000**

This company is a superb example of how enlightened management in British industry is taking decisive steps into the eighties, redesigning the product range to utilize real-time micro based systems technology to the full.

The new software team will fit into the existing organisation, reporting to the Software Design Manager — also a recent recruit. Vacancies therefore exist from Team Leader level down to Programmer/Designer. At this stage, minimum experience required is 2-3 years and must cover as many of the following as possible: INTEL 8080; H/W-S/W interfaces; 8080 ASSEMBLER; PLM; IC80/MDS; RMX86; real-time systems; distributed control software.

Modus also has process control opportunities in other areas — e.g. Hampshire, Surrey and Central London — at both Senior and Junior levels. Enquiries naturally welcomed.

## Multifunctional Micro Software

Developing a wide range of software from networking to text-editing.

**South Herts. c. £8,000 + + +**

This company has gone from strength to strength in recent years, selling and supporting increasingly sophisticated micro systems, based on both INTEL & TEXAS microprocessors. The software staff can be involved in developing or enhancing software covering a vast range of systems, including distributed processing, text management, emulation, etc.

Candidates for these software programming and design positions must have between 2-5 years experience of Assembler level processing on either minis or micros. Most importantly, applicants must be self-reliant individuals, ready and willing to get involved in a variety of functions. "Small company benefits" include an extremely valuable bonus scheme and possibly a company car after a period with the company.

## Project Leader + Analyst/Programmers

On-line, database systems development for a 4341 machine.

**Hounslow, Middx. £7,500-£11,500**

One of the largest and most successful companies of its kind in Europe, our client offers both a superb technical environment and long-term security and job interest.

The requirements for systems staff all have one common denominator — CICS systems design experience. The company has a new 4341 and intends using not only CICS, but also the DL/I database — for which full training will be given.

The salary range quoted above reflects the need for a variety of people, from Analyst/Programmer with 2-4 years experience to Project Leaders with 6-8 years in the industry. Excellent career opportunities with thorough training and career development schemes.

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Multipurpose systems group within a major oil company.

**West End £7,500-£13,000**

A small but expanding multidisciplinary group offers an ideal opportunity for dedicated OR practitioners to develop their particular skills and experience in challenging and exciting projects.

Applicants must possess a good class honours degree, be totally fluent in FORTRAN programming and have recent in-depth project involvement; in other words, they are not just seeking FORTRAN programmers from an OR environment. All candidates will be provided with a full job specification for the vacancies which range from Programmer to Project Leader level.

## MYRIAD

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## IBM 4431

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This is an ideal opportunity for a SENIOR ANALYST to progress into a managerial role, coupled with internal consultancy duties, on both mainframe and micro equipment. Reporting to the DPM, the person appointed will have a sound analysis background, including project control experience, and be responsible for supervising the development and implementation of various commercial applications. A knowledge of on-line systems and IBM software will be particularly useful as the work will involve the introduction of real-time facilities in first-time user departments.

## SENIOR PROGRAMMER

TO £10,000

To head the programming team, this person will have written extensively in COBOL, probably using structured techniques in an IBM OS environment. On-line and/or micro experience will be an added advantage but full training will be given in these areas.

## PROGRAMMER

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The successful applicant will have programmed in COBOL for 2 years and will now be seeking a wider role within a highly respected organisation. Displaying enthusiasm and resourcefulness, the PROGRAMMER will develop and implement a variety of applications working with the minimum of supervision.

## CENTRAL LONDON

The new mainframe will initially run systems transferred from the New York office and significant development is envisaged to incorporate on-line techniques. A limited amount of travel to the U.S.A. is likely and each position offers a challenging opportunity to participate in planning the future DP requirements for the U.K. operation.

Our Client is a major international, financial organisation with approximately 20,000 employees world-wide. They are able to provide first-class conditions of employment and are based in luxury offices close to several main-line stations.

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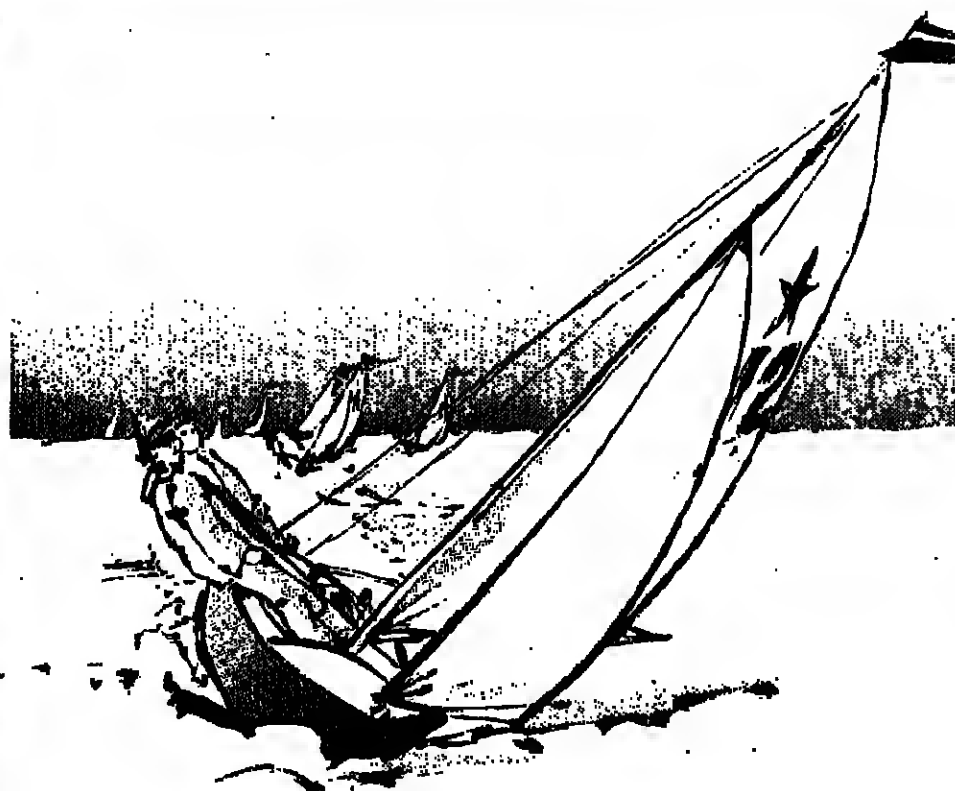
Candidates for this position will be information systems professionals with a track record in the systems and project management fields. As the systems to be developed will be of a corporate information nature, experience of telecommunications, message switching and word processing is desirable.

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For further information contact Diane Oubridge on 01-637 9611.

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**JBA**

## Customer Support Executives Financial Packages & Word Processing Bristol £6000—£9000 + benefits

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## Analyst/Programmer

**Bristol £6000-£9000 + benefits**

Our Client, a leading Systems House marketing accounting services, have a vacancy for an Analyst/Programmer to develop new and expand existing Financial Packages. A knowledge of DEC hardware, Basic and RSTS will be valuable but a thorough understanding of financial applications is essential. **Contact: Bob Male**

## MVS Expert

**Birmingham £10,000 +**

Our client is a large, multi-national organisation with extensive and advanced computing facilities. The hardware and software involvement is technically very challenging involving an international network, several mainframes and large IMS data bases. A senior vacancy now exists for a specialist with managerial ability to take responsibility for the systems software function. The job will call for a high level of technical involvement as well as some international travel. Applicants should have a solid technical background based on large IBM mainframes with specific experience of the MVS operating system. Familiarity with JES 3, TSO and IMS would be an added advantage as would a knowledge of French, German or Italian. **Contact: Bev Stevens**

## Senior Systems Analyst

**Kenilworth c. £9250 + Paid Overtime**

Our client has a really interesting and unusual senior opportunity involving: — DEVELOPMENT OF A MAJOR NEW SYSTEM — ADVANCED IMS DB/DC TECHNIQUES — INTERNATIONAL TRAVEL OPPORTUNITIES — FIRST CLASS SCOPE FOR CAREER DEVELOPMENT. Applicants should have a sound education with at least 3 years systems analysis experience. Familiarity with large IBM and engineering environments is desirable but good, fundamental systems analysis skills are much more important. **Contact: Bev Stevens**

## Computer Auditor

**Central Birmingham c. £9000 + Benefits**

Our client, one of the foremost finance organisations is looking for a confident, self-starter to join a team in their Computer Audit Department. Applicants will have had 3/5 years experience in analysis preferably associated with IBM hardware. As well as independently auditing current systems, the successful applicant will be expected to provide systems assurance on a variety of developments including Data Base, On-Line and Communications systems; knowledge in these areas is advantageous. A skilled communicator with an ability to produce concise and well written reports will find significant promotion prospects within the organisation. Normal finance sector benefits together with relocation assistance are available. **Contact: Christine Pountney**

## Senior Programmer

**Rugby c. £8000**

An engineering organisation, forming part of a larger international group, is seeking a Senior Programmer to play a leading role in a major systems development programme. The installation is technically up to date with opportunities to be involved in projects using data base, on-line and datacomm techniques. Applicants should have at least 4 years IBM COBOL programming experience, preferably using DOS, combined with the ability to lead a team. A knowledge of CICS and/or DL/I would be an advantage. **Contact: Bev Stevens**

## Scientific Programmers

**Tewkesbury £ Negotiable**

Racal Redac Ltd are recruiting a number of programmers to satisfy their significant development plans. The Company is recognised as one of the world's leading organisations in the field of Computer Aided Design. Hardware ranges from microprocessors to the DEC VAX, all dedicated to producing highly advanced systems aimed at fulfilling this expanding world market. Applicants will hold a degree or equivalent and will be able to demonstrate consistent advancement in their present environment. Opportunities exist for both Development Programmers and Customer Service Programmers, each area offering a real challenge to candidates capable of defining and solving problems. Racal Redac Ltd, offer competitive salary structure, significant fringe benefits, an informal but highly professional working environment and an excellent location. Relocation assistance will be available in appropriate cases. **Contact: Bob Male**

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## Analyst/Programmer UP TO £10,000

Age 26+, Minimum of 3 years' experience in on-line commercial data processing including Applications Analysis and Programming, using Basic, preferably on DEC PDP11 computers.

## Programmer UP TO £8,500

A minimum of 1 year's experience is required on PDP11 hardware, RSTS and Basic Plus.

Please write with your CV to:

## Management Control Systems

4th Floor, Bliton House, 54/56 Uxbridge Road, Ealing, London W5 2TJ.  
Or telephone (reverse charge) 01-840 3292

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For a confidential discussion please contact Mike Hessian. Ref. CW291.

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021-632 6848

**CPC**

## BRUNEL UNIVERSITY ADMINISTRATIVE COMPUTING MANAGER

Applications are invited for the post of Administrative Computing Manager (previously Data Processing Officer) in the University Central Administration. Applicants, who should possess a University Degree or equivalent qualification, must have experience of systems analysis. The successful candidate will be responsible to the Secretary General for development and maintenance of computer systems for the Central Administration.

Salary within the national administrative grade II scale £22,000-£11,575 (under review) plus £967 London Allowance. Write for application form and further particulars to the Personnel Secretary, Brunel University, Uxbridge, Middlesex, UB8 3PH, or telephone Uxbridge 371551 extension 49. Closing date: 8 January, 1981. (3856)

## THE UNIVERSITY OF MANCHESTER CHAIRS IN COMPUTER SCIENCE

Applications are invited for two Chairs in the Department of Computer Science. The other chair in the Department is held by Professor D. B. G. Edwards (CT Chair in Computer Engineering). Professor S. H. Storer (Barclay Chair in Microprocessor Applications in Industry and Commerce) is currently in the Department. Candidates should be active in research in any field of Computer Science. Some possible fields of interest include: but are not limited to, the following: — Artificial Intelligence, Computer Graphics, Computer Architecture, Computer Networks, Robotics, Theoretical Computer Science. Applications (2 copies) should be sent to the Department of Computer Science, The University of Manchester, Oxford Road, Manchester M13 9PL. The University of Manchester is an equal opportunities employer. (3798)

# Targa

## DATA BASE ADMINISTRATOR to £12,000

A well-known Company, based South of London, require a Data-Base Administrator for their large computer site. The company use IBM 370/158 & 3031 mainframes running under OS/VS1 & MVS respectively. The successful applicant will have extensive knowledge of programming on IBM equipment and currently be at least a SENIOR PROGRAMMER who has good experience of Data-Base Systems. Ref. 3184.

## ANALYST/PROGRAMMER £6,000

A company based in South London require an Analyst/Programmer who has at least one year's good commercial experience gained in Hewlett Packard machines utilizing FORTRAN. The successful applicant will also be required to have an "A" level pass in Mathematics. Very friendly company with pleasant working conditions. Ref. 3170.

## TERMINAL OPERATOR £5,500

A City based company have an URGENT REQUIREMENT for an Operator to work on an IBM 8100 (DPC) terminal, which is linked to an IBM 370 mainframe in the USA. The specific requirements for this position are: a good understanding of IBM systems especially DOS/VS, knowledge of RJE and the ability to perform House-Keeping and File-Maintenance procedures. A very easy two shift system is in operation. Ref. 3168.

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## PDP11/70 SHIFT LEADER, S. LONDON HIGH-NEG.

Our client a large well known concern in S. LONDON is currently looking for an experienced OPERATOR or SENIOR OPERATOR with at least 2 years' plus current experience using a PDP11/70 running under RSTS11. Your should be of smart appearance, able to demonstrate your supervisory capabilities/skills and be able to motivate staff under you. Benefits for this position are superb, namely, sub. mortgage, NCP, BUPA, LTA, STA and LV. Ref. 3186.

## ICL SYSTEM 4 OPERATOR, S. LONDON to £6,300

Based in S. LONDON our client is looking for an experienced SYSTEM 4 operator. If you have between 1-4 years' experience on SYS 4 and would like to progress our client would like to hear from you. There are possibilities in the future of moving onto their larger 2800 systems. The company also offer a first-class benefits package. Ref. 2265.

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Edinburgh Regional Computing  
Centre

### ASSISTANT TRAINING OFFICER

The Centre aims to provide computing services to Edinburgh University and other users in the Edinburgh area. The main service is based on an ICL 2980 and 2977 running under the Ed. Edinburgh Multi Access System. In addition there are many mini and micro computer systems located in departments.

As part of its support to these services, the Centre has a Training Unit responsible for providing courses for users. To meet the need for additional course material, particularly in aspects of distributed computing, a further Assistant Training Officer post has been created. Applications are invited from graduates or those holding a comparable qualification, who have at least two years' experience of computing including use of interactive systems. Experience of teaching would be useful but is not essential, and an aptitude for helping other people use computers is more important.

The post is an Assistant Computing Officer grade, with salary in the range £4785-£5985 (under review) with superannuation under USS. For further details and an application form write to: The Secretary, University of Edinburgh, Old College, South Bridge, Edinburgh EH8 9JH. Closing date 17.12.80. To whom completed forms must be returned by 23.12.1980. (1984)



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### IMPERIAL COLLEGE OF SCIENCE AND TECHNOLOGY

### SYSTEMS ANALYST

#### ADMINISTRATIVE COMPUTER UNIT

Applications are invited from experienced Systems Analysts to assist with the further development and integration of the College's Central Administration Computer Systems. Experience in the finance field advantageous. Salary in Administrative Grade 11 Scale £9,220-£11,576 per annum (under review), plus £987 London Allowance. Superannuation under USS. Five weeks' annual leave.

Further particulars and application form from: the Personnel Secretary, Imperial College, South Kensington, London SW7 2AZ. (Telephone 01-589 6111, extension 2003). Closing date 6th January 1981. (1977)

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To lead a systems and programming team responsible for design and implementation, maintenance and support of new and existing Financial/Administrative systems. Applicants must have gone through programmer/analyst/project leader career progression opening at least nine years and must have significant experience in the maintenance and costing of systems implementation.

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These positions require a minimum of four years' systems and two years' programming experience in the area of Finance/Administrative applications ideally obtained in an IBM DOS COBOL environment and must have controlled at least one major project through to implementation.

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A minimum of three years' commercial IBM 370 DOS/VS COBOL experience is required and for Analyst programme an additional one year of systems analysis and design.

For all above posts minimum requirement is a University Degree or equivalent, proficiency in English is essential. A second language (Arabic or French) would be an advantage.

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- Competitive salaries. No local income tax.
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Personnel and Training Manager  
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Doha - Qatar  
Arabian Gulf

All applications will be dealt with promptly and in strict confidence

## JBA

### Manager Computer Department

West London c. £10,500 + bonus  
+ attractive Co. car

Our client, a major importer and supplier of a wide range of vehicles to the U.K., is seeking a manager for their established computer department. This attractive position will appeal to experienced managers who do not see such a positive future with their present companies, or to experienced analyst/programmers who may be acting as deputy managers in their present position and who are being held back awaiting promotion.

You will have good personal communications skills and the flexibility to slot into an existing management team.

#### Responsibilities:

The day-to-day running of a computer services department providing program development and maintenance, operations, data preparation and administration with a staff of approximately 12 people. The successful candidate will also be responsible for the eventual smooth transition from the present equipment to a 4300 installation at some future date.

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#### Systems:

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#### Experience:

Essential — RPGII and previous commercial systems/design and development. Desirable — DOS/COBOL in a 370/4300 environment, telecommunications.

The Company offers attractive benefits, non-contributory pension, free life insurance and a good bonus scheme. If you would like to be considered for this position please contact me as shown below.

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## Systems Programmer— B6800

A vacancy exists for a Systems Programmer with special interest in very large mainframe computer systems. The Engineering Department's B6800 is one of three at the Cumberland facility and is used by up to 100 programmers and engineers via terminals. The person appointed would be responsible for developing programming tools; installing new levels of B6800 system software; providing assistance and advice to both users and in-house hardware maintenance engineers; troubleshooting software systems problems. The position will require liaison with Burroughs facilities in the USA and may involve occasional foreign travel.

Applicants should have at least five years experience of systems programming or software support on large computer systems.

Burroughs is an international company with a reputation as a technological leader. The B6800 facility is one of the most powerful commercial computer systems in the world. This is a great opportunity to gain extensive experience of such systems. Opportunities also exist for career progression into software design at the Cumberland facility.

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For details phone 02367 31529 (reversing charges) or write to the Graduate Recruitment Manager, Burroughs, Cumberland G88 8BN.

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Contact: Margaret Stevens

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Contact: Brian Postles

### Senior Service Engineer

London c. £9,500 + Car

A highly respected mini-computer Company wishes to recruit an experienced Engineer for commissioning and maintenance work in the above location. Practical knowledge of mini-computers would be desirable but is not essential, as full training will be provided as appropriate. Successful applicants must possess sound business sense and the ability to act in a thoroughly professional manner. This position offers excellent career prospects for the right person.

Contact: Jim Baker

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A minimum of two years experience of BASIC + nr BASIC + 2 language from a financial or commercial environment, together with a knowledge of commodities and DEC hardware would be a definite advantage. The ability to understand users and their problems is essential. Good salaries and generous benefits are offered to successful candidates.

Contact: Janet Chilvers

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Contact: Janet Chilvers

### Senior Programmers

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Candidates must have had at least 3 years programming experience, with exposure to medium or large systems. A sound knowledge of IBM COBOL and of OS or DOS/JCL is essential.

Contact: Isabel Bruce

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Wembley Park Up to £9,000

A distributed multi-national company based in Wembley Park are currently developing an HP3000 system and so require a number of Programmers to support their teams. Candidates should have at least 2 years experience of COBOL programming, preferably gained in an HP3000 environment. Previous experience of Real-Time would be advantageous. Comprehensive training will be given in a number of areas. Usual large Company benefits apply.

Contact: David Hendry

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(3829)

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<b>OPERATING SYSTEMS</b> Systems Software Designers and Programmers with good experience in Assembler programming and basic software gained on DEC, DG or similar minis, or micros, required for design of operating systems. Permanent base in Oxon, but lengthy overseas assignments possible. £7-10K	<b>HOLLAND MINI &amp; MICRO</b> Real-time Mini and Micro Programmers, Analysts and Consultants sought by Dutch Systems House involved chiefly in technical and scientific projects. Assembler essential, Coral, RTL/2 or similar also of interest. Generous relocation packages for permanent position, substantial benefits. to £17K
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<b>MICROS BERKS.</b> Software Engineers (One Group Leader) with in-depth knowledge of the application of real-time operating systems using microes needed by UR market leader in environmental controls. Location in Berkshire. to £12K	<b>PROCESS CONTROL</b> Programmers and Analysts with 3+ years' mini or micro Assembler (DEC in particular) experience plus relevant (i.e. scientific) degree required for producer of Industrial Control and Automation Systems. Offices in Herts. £7-10K	<b>CAD S/W ENG.</b> Software Engineers and Designers with experience of technical and CAD software on DEC, Prime or similar equipment required for development work on CAD projects with this East Anglian client. Knowledge of Fortran and Assembler preferred. £8.5K
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Notice is hereby given that the West Sussex County Council wish to receive tenders for the supply of Data Preparation Equipment.  
Their appropriate Tender Forms, together with copies of Conditions of Contract and a specification may be obtained on application to the Head of Computing Services, County Treasurer's Department, County Hall, Chichester, West Sussex.

The County Council do not bind themselves to accept the lowest or any tender received.  
All tenders should be submitted on the above-mentioned Tender Forms and should be delivered to the County Secretary of the West Sussex County Council at County Hall, Chichester, West Sussex. It is a condition of acceptance of tenders that they shall be open for inspection on or before 12 noon on 20th January 1981. Nothing should appear on the outside of the envelope which would indicate the name of the tenderer.  
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# COMPUTER WEEKLY TOPS 94,000

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<b>OPERATING SYSTEMS</b> Systems Software Designers and Programmers with good experience in Assembler programming and basic software gained on DEC, DG or similar minis, or micros, required for design of operating systems. Permanent base in Oxon, but lengthy overseas assignments possible. <b>£7-10K</b>		<b>HOLLAND MINI &amp; MICRO</b> Real-time Mini and Micro Programmers, Analysts and Consultants sought by Dutch Systems House involved chiefly in technical and scientific projects. Assembler essential, Coral, RTL/2 or similar also of interest. Generous relocation packages for permanent position, substantial benefits. <b>to £17K</b>
<b>MICROS BERKS.</b> Software Engineers (One Group Leader) with in-depth knowledge of the application of real-time operating systems using micros needed by UK market leader in environmental control. Location in Berkshire. <b>to £12K</b>	<b>PROCESS CONTROL</b> Programmers and Analysts with 3+ years' mini or micro Assembler (DEC in particular) experience plus relevant (i.e. scientific) degree required for producer of Industrial Control and Automation Systems, Offices in Herts. <b>£7-10K</b>	<b>CAD S/W ENG.</b> Software Engineers and Designers with experience of technical and CAD software on DEC, Prime or similar equipment required for development work on CAD projects with this East Anglian client. Knowledge of Fortran and Assembler preferred. <b>c£8.5K</b>
<b>SENIOR PROG HERTS.</b> Senior Programmer required by large IOM and Mini user for newly created technical support role — experience of CICS, DL/1 and JSP desirable. Responsibilities include involvement in systems design, standards, etc. Large company benefits apply. <b>c£9K</b>	<b>GERMANY IBM</b> Analysts and Programmers wanted to work on IBM compatible systems at European division of leading Computer Systems Manufacturer. The requirement is for Assembler, TSO, and DB/DC experience. Relocation assistance and excellent benefits package. <b>£12-18K</b>	



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In a varied and fulfilling role you will work closely with both clients and Consultancy staff on all aspects of recruitment from job identification, interviewing, personnel selection and the preparation of short lists.

Ideally you should be 25+ and have at least three years' computer experience in either Systems and Programming or Computer Operations. You should also be prepared to work in an ethical and professional manner. This coupled with sound business sense and the capacity for hard work in a professional atmosphere, should put you in the £10000 p.a. bracket within 12 months.

We offer a substantial benefits package including an excellent commission (commission is guaranteed for the first 3 months). Private Pension Plan, 4 weeks' annual holiday and a company car after six months. Please contact the Recruitment Manager, Mike Oakes, or alternatively send him your detailed curriculum vitae.

**TEL. NO. 439 1856**

**Datascene International Ltd.**  
169-173 Regent Street  
London W1B 7JE  
Telex: 25451

### ICL COBOL Wilshire

Contract or permanent. Assignment at our client developing major new systems on ICL equipment. Experience of programming in a commercial environment and knowledge of VME/B is a requirement.

Contact Bob Carr on St Albans (0727) 34301 (24-hr. answering machine).

Fraser Williams (London) Ltd., 3a Conherre House  
17-19 London Road, St. Albans, Herts.  
or contact Ian Ould on 01-388 0038

## Fraser Williams Computer Consultants

### SENIOR PROGRAMMER

Salary £8411-210642 p.a.  
**CAN YOU HANDLE AN ON-LINE SYSTEM?**

Thames Valley Police are looking for an experienced Senior Programmer to perform development and maintenance work on a computer on-line system. A challenging series of assignments to this system and to associated IDS batch programmes is envisaged.

The successful applicant will have extensive COBOL experience on an on-line system, preferably but not exclusively with Honeywell 8000/Level 8B using IDS and TDS. He/she must be willing to take an increasing interest in the maintenance of existing software, and development of future systems, and be capable of working on their own and to rigid standards. He/she will also have the ability to communicate at all levels and to instruct staff in the basic systems.

Over four weeks' holiday, pension scheme, assistance towards removal expenses.

Application form and further particulars from: **The Principal Personnel Officer, Thames Valley Police Headquarters, Kidlington, Oxfordshire, OX5 2NX (Telephone Kidlington 4343, ext. 287).**

**BOX Nos.**

Box number replies should be forwarded to

Box No. 476 Computer Weekly  
25/26 Bedford House  
Stanford Street  
London E21 3LU

## SYSTEMS PROGRAMMERS to £28500

Our client is a major British Industrial group with an increasing commitment to data processing which is viewed as an essential service by the many operating companies which comprise the group.

The investment in data processing, although already substantial, is to be increased significantly in the next year or two in order to provide the service levels required by top management.

As part of this development there is a need to increase the technical knowledge, both in relation to the development of systems and the support of operational systems and our client therefore wishes to recruit additional systems programmers.

Candidates must have in-depth experience of at least two of the following software areas:

- CICS
- DL/1
- OS/VSI or MVS
- NCP
- VTAM

In return our client can offer:

- Large scale IBM hardware
- Extensive new systems development
- Excellent career development prospects
- Good working conditions
- Generous relocation assistance

Interested candidates should contact Ivor Norton quoting reference CW/8086 in writing or by telephone at the Harrogate Office in order to arrange a confidential discussion.

## Ivor Norton Management Services Ltd

**LONDON**  
52, Shaftesbury Avenue,  
London W1V 7DE  
01 734 8882

**HARROGATE**  
P.O. Box 63, Copthall Tower House,  
Harrogate HG1 1TS  
Harrogate BB8 2BH

**GLASGOW**  
11 Bothwell Street,  
Glasgow G2 8LY  
041 226 4911

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### 7K FOR 3 MONTHS TAX FREE

Programmers up to £600 per week Tax Free

Three months' intensive contract in Saudi Arabia. You will need four years' experience on ICL 2900 series with COBOL under executive, plus George II. All fares, food, accommodation free.

For further information contact:  
**01-439 8251 AIDGRADE LTD.**

### Telecommunication Systems Development Up to £10,000

For people with at least 4 years experience in computing and an interest in developing such current technology as micro-computer data capture in the implementation and design of highly sophisticated telecommunication networks, Ladbroke Racing have got exactly what you're looking for.

They are looking for someone with proven computing ability and knowledge of telecommunication network design to help them in the design and development of highly advanced, original technologies relating to telecommunications and data capture.

The work is stimulating, remuneration and benefits excellent and career prospects are outstanding.

If you have what it takes and can relate competently with all levels of management, Ladbroke Racing would like you to contact them.

Just write to Mrs. Mary Cobban, Ladbroke Racing Ltd., Hanover House, Lyon Road, Harrow, Middx.

## Ladbrokes

## datascene OPERATORS

**ICL 2900 SHIFT LEADER SUSSEX c. £7100**  
Well-known retail company need an experienced Shift Leader for their new 2986 with an extensive communications network. Two shifts only, and excellent company benefits are offered. J/4858

**ICL 2900 OPERATOR KENT c. £5700**  
Experienced operator required by travel company, to assist in the running of their 2904 using EXEC 3S, very good training facilities and good staff discounts are offered for this two-shift only position. J/4807

**ICL 2900 OPERATOR ESSEX c. £5000**  
Transport company in Essex require a self-motivated person to look after their 2903. The person selected will be able to deal with all aspects of 2903 operation. J/4857

**ICL 2900 OPERATOR HERTS. c. £5000**  
Manufacturing company in Herts require an operator for their busy 2904 installation. Pleasant working conditions, good training and productivity bonus are offered. J/4860

**ICL 2900 OPERATORS LONDON £5500+**  
Three professional companies in Central London urgently require experienced operators for their installations. Hardware ranges from 2904 under EXEC 2S to twin 2980s using GIII and VME/B. J/4809

**IBM OS OPERATORS SURREY £5-7000**  
If you have at least 12 months' OS experience ideally with VSI, then this progressive banking installation would be pleased to see you. Excellent training and career opportunity + cheap mortgage.

**IBM OS OPERATORS LONDON £5-7500**  
City bank requires operators with at least 12 months' experience in a OS VSI environment. Excellent prospects and good training facilities/season-ticket/tennis, social club and mortgage facilities.

**PDP 11/70 OPERATORS LONDON £6-6500**  
Osoyear's experience operating under RSTS, AIMS or RSX will give you the opportunity to join a well-established company with a computer system still in its infancy. This provides a good opportunity for operations staff to progress quickly into Technical Support or programming.

**IBM SYS 34 OPERATOR W. LONDON £5500**  
New installation require an experienced IBM Systems 34 Operator to assist in the setting-up of the department. Good opportunity to expand with the company and progression to Programmer is possible.

**BURROUGHS OPERATOR**  
Well-established bureau in the City of London require operators with around 9-18 months' experience of medium systems M/V. Career opportunities are good and could lead either to Technical Support or Programming. J/4859

**01-439 7871**

## IATA APL PROGRAMMER

The International Air Transport Association (IATA) has an immediate vacancy for an APL Programmer in its Geneva, Switzerland office.

Position:

The successful candidate will become a member of a project team which is currently developing the "IATA Statistical Information System" on a Prime-550 computer. The development of this system will eventually consist of numerous statistical data collections relevant to the aviation industry.

Main Tasks:

- integration of these data collections into the system
- participation in the development of a data retrieval/manipulation language
- development of tailor-made programs according to user specifications

Qualifications:

- B.S. in Computer Science, statistics, mathematics or equivalent diploma
- 2-3 years' APL programming experience preferably in a commercial environment
- fluency in English

Detailed Curriculum Vitae should be forwarded to:

**Manager, Personnel IATA**  
P.O. Box 160  
1218 Cointrin - Geneva, Switzerland



# Sales Executive

Manufacturer  
ADVANCED GRAPHICS SYSTEMS

Negotiable  
BASIC SALARY  
**£15,000** per annum  
+ 2 litre car  
+ Benefits

Candidates are welcome to reply  
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We are a leading and successful Manufacturer of high performance image processing and graphics display systems supplying industry and science with highly advanced and innovative products that are truly 'state of the art'. We have the advantage of being a profitable, respected and independent British Company with an established customer base. Our capability includes the design, development and support of our own systems where our expertise is as great as our enthusiasm for success.

This continuing success has created outstanding opportunities for experienced Sales and Marketing Executives who have a strong technical bias. It is essential that you are successfully selling a technical product and most likely you have an engineering background.

Apart from a secure earnings factor the career potential is superb with UK and Overseas opportunities.

We can offer you a close, team environment with high rewards, excellent products and a refreshing attitude to earnings. This is an opportunity for the ambitious.

For an immediate and confidential interview to take place in the relevant SCR office, please contact our Advising Consultant, **SIMON LEVER ON 01-935 0671** (24 hour answering service) OR 021-420 1574 (evenings & weekends). If you wish, please write to Simon Lever in Birmingham. Applications will be treated in strict confidence.

London 01-935 0671 3 Mandeville Place, Wigmora Street, London W1M 5LB  
Birmingham 021-238 3781 35-37 Great Charles Street, Queensway, Birmingham B3 3JY  
Manchester 061-833 0427 Blackfriars House, The Parsonage, Manchester M3 2JA  
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SC Specialist Computer Recruitment Ltd

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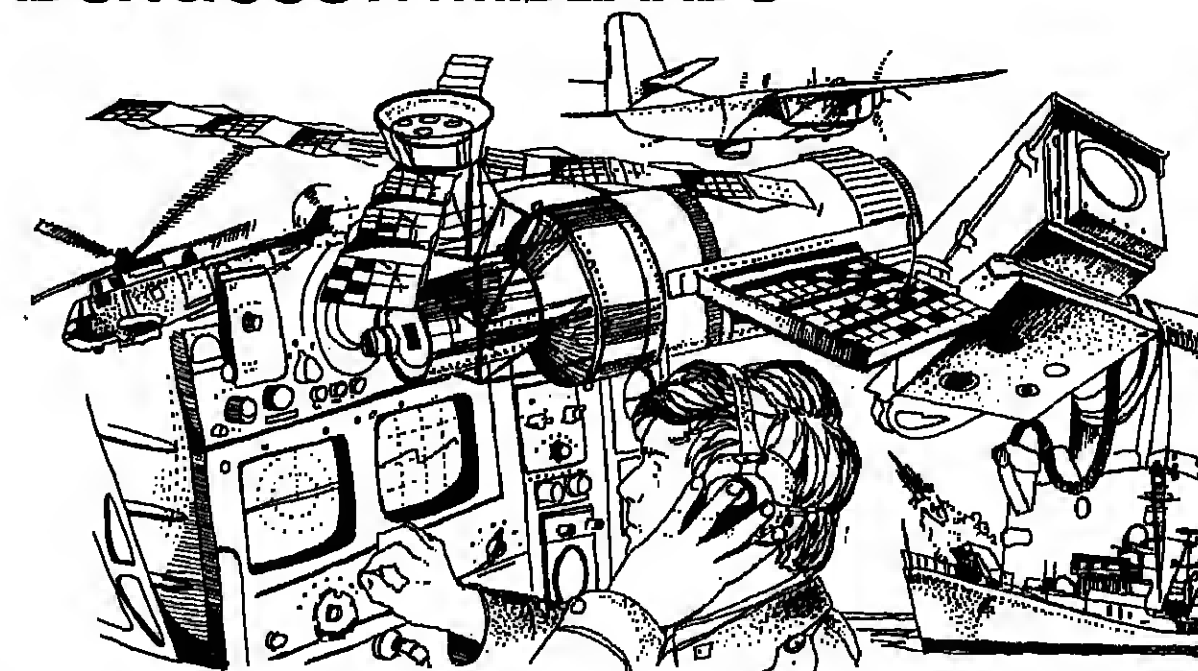
Our clients are the U.K. subsidiary of a well established systems house offering services in the scientific and technical field. They have already opened two major offices close to London and a third is planned early next year with the intention of establishing centres throughout the U.K.

To sell these services they are **not** looking for a technical expert but a high quality sales executive who is a self-starter and also capable of setting up a sales team once success has been established. Experience in the computer industry, software house and/or recruitment consultancies would be an advantage but they would naturally expect you to have an excellent track record.

Our clients are looking for a lot but again the rewards are excellent. Assuming you have the ability you should be able to comfortably earn in excess of £20,000 a year (a basic salary of £8,500 together with good guarantees will be offered). Those earnings will naturally be enhanced by the normal benefits expected with an established organisation.

For further information or to arrange an interview please contact **ROY HIGHFIELD** quoting reference **CW1112**.

(3857)



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**PRINCIPAL  
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APPOINTMENT BASED IN PARIS

EDG Engineering International Limited offers a contract to a suitably qualified Systems Analyst wishing to work in Paris. Minimum essential experience will be:

1. 5 years' general computing with 2-3 years' experience in systems analysis and programming for Data General Computers.
2. 3 years' in Real-Time process control.
3. Experience of Port evaluation and software quality assurance.

Preference will be given to applicants with experience in modern telecommunication systems and the offshore oil industry.

EDG Engineering International Limited is an established and important engineering design and management consultancy with global connections in the oil, gas and general process industries. Contract terms offered by the Company will be attractive and will reflect the seniority and responsibility attaching to proposed post.

Please apply by telephone or in writing to:

Steve Rhodes (Present Manager)  
**EDG ENGINEERING INTERNATIONAL LIMITED**  
42 Bond Street, Brighton, Sussex BN1 1RD  
Telephone (0273) 21911

**Targa**  
**SENIOR  
RECRUITMENT  
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**C £12,000 + CAR**

Targa Computer Services, which was established in late 1978, is part of a Recruitment group of companies. We are currently looking for 2 Senior Recruitment Consultants to expand and develop further the recruitment services for the Senior appointments of the computing industry.

Ideally you should be over 25 with at least 3 years' computer experience, to include either Systems Analysis or Programming knowledge. You should have the ability to advise clients on salary levels; job identification and specification; and advertising, thereby compiling a client profile for suitable applicants. Additionally, you must be able to assess people and to advise them on their career development.

We offer a substantial benefits package including a basic salary up to £5000 plus an excellent commission structure, which is guaranteed for the first 3 months. There are also two incentive bonus schemes plus a company car after 6 months.

Please contact M. Dauncey on 01-439 1856 or alternatively send him your detailed C.V.

**TARGA COMPUTER SERVICES**  
46/47 LONDON WALL, LONDON EC2M 5TE

(3058)

**MCS**

**Management Control Systems**

The established independent software and systems company need experienced people to work on the specification and development of on-line commercial systems, particularly in the areas of Distribution and Manufacturing.

You will be working in pleasant offices at Ealing, where we have our own PDP11 machine dedicated to development.

You will also be eligible for car options, profit share and pension scheme operated by the company.

**Analyst/Programmer**  
**UP TO £10,000**

Age 26+. Minimum of 3 years' experience in on-line commercial data processing including Applications Analysis and Programming, using Basic preferably on DEC PDP11 computers.

**Programmer**  
**UP TO £8,500**

A minimum of 1 year's experience is required on PDP11 hardware, RSTS and Basic Plus.

Please write with your CV to:

**Management Control Systems**

4th Floor, Bilton House, 54/56 Uxbridge Road, Ealing, London W5 2TJ.  
Or telephone (reverse charge) 01-840 3292

(381)

**A new venture company**

ZYNAR is dedicated to exploiting VLSI at the silicon systems level. The founders of ZYNAR were responsible for several world-famous microcomputer products and intend to repeat these successes at the silicon systems level. ZYNAR is expanding rapidly and is recruiting critical skills.

**Positioned for future leadership**

ZYNAR has chosen to participate in four major growth areas:

- Local computer networks.
- Systems configuration technology.
- Silicon systems software for the 1980's.
- Selected innovative OEM products.

Its first product, the Nestar local microcomputer network, clearly demonstrates this innovative approach. ZYNAR will be undertaking business operations in both Europe and the USA. A development group will be established in Palo Alto, California, with Nestar Systems Inc.

**Career Opportunities**

- Software Engineers
- Hardware Engineers
- Systems Engineers
- Marketing & Sales

If you have experience and enthusiasm for microcomputer systems, networks, innovative software and an ability to be entrepreneurial, together with operating in a worldwide market, please contact:

Colin Crook, Uxbridge (0896) 69831 or alternatively send c.v. to Zynar Limited, 122 High Street, Uxbridge UB8 1JT.

(ZYNAR is a subsidiary of The Rank Organisation)

(3819)



## MYRIAD

## COMMUNICATIONS ENGINEERS

PABX RADIO FACSIMILE DATA  
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c.£9500

We are seeking additional Communications Engineers to join an in-house team providing technical support for total communications systems covering the U.K., Europe, the Middle East, and trans-Atlantic links. The company is a major petrochemical and energy resource engineering organisation operating world-wide with an impressive history of success and expansion.

The persons appointed will be involved in the implementation and support of the following systems: Large-scale Data Networks, Message Switching, Electronic Office, Private Telephone Exchanges, Call Logging, Facsimile Transmission, Paging, Mobile Radio, Point-to-Point Radio, Private Voice.

This will include involvement in: negotiation with vendors, clients and PTTs; system and equipment evaluation; first and second level system maintenance; preparation of implementation and maintenance schedules; ongoing contact with users.

If this is the type of role which interests you and you have relevant experience in any of the technical areas mentioned above then we shall be pleased to discuss these positions with you in detail. Telephone, or write quoting reference SW2/1112/CW.

## MYRIAD APPOINTMENTS LIMITED

30 Fleet Street London EC4Y 1AA Telephone 01-353 0981 24 hours

(3884)



## APL PROGRAMMER

The International Air Transport Association (IATA) has an immediate vacancy for an APL Programmer in its Geneva, Switzerland office.

Position:

The successful candidate will become a member of a project team which is currently developing the "IATA Statistical Information System" on a Prime-550 computer. The development of this system will eventually consist of numerous statistical data collections relevant to the aviation industry.

## Main Tasks:

- integration of these data collections into the system
- participation in the development of a data retrieval/manipulation language
- development of tailor-made programs according to user specifications

Qualifications:

- B.S. in Computer Science, statistics, mathematics or equivalent diploma
- 2-3 years' APL programming experience, preferably in a commercial environment
- fluency in English

Detailed Curriculum Vitae should be forwarded to:

Manager, Personnel

IATA

P.O. Box 180

1216 Courmayer, Geneva, Switzerland

## SOFTWARE ENGINEERS

We have vacancies for enthusiastic and experienced electronic engineers, who specialise in software system design and programming of microprocessors, in particular 8080 family. A familiarity with higher level languages such as Fortran, ART, PL/M would be a great advantage. The envisaged work ranges from 8080 software development to use of PD11/34 + INTELLECT system for image processing.

W. Vinton Ltd., a company with a long standing reputation in Television Studio Equipment and Aerial Reconnaissance Systems, has entered the field of Electro Optics by launching new products. The present work includes development and manufacture of Servo Systems for television studio equipment and aerial reconnaissance cameras, electronic speckle pattern interferometry, TV frame stores, computer interfaces, robotics, etc.

Should you be interested in joining our expanding Electronics Department at a competitive salary, please apply in writing (with full C.V.) to:-

Dr. B. M. Watresiewicz, Chief Executive, Electro-Optics Division, W. Vinton Ltd., Western Way, Bury St. Edmunds, Suffolk, IP33 3TB.

(1882)

# COMPUTER WEEKLY

## CHRISTMAS PUBLISHING ARRANGEMENTS

The next issue of Computer Weekly will be published on January 1, 1981, and all copy for classified advertisements should be received by 10 a.m. Tuesday, December 23.

# COMPUTER WEEKLY

Quadrant House, The Quadrant, Sutton  
Surrey SM2 5AS  
Tel. 01-661 0121

# CALMA

## INTERACTIVE GRAPHIC SYSTEMS

CALMA is an American-based computer company, specialising in producing computer systems for design applications. We are expanding rapidly and require the following staff:

### 1) HARDWARE TECHNICAL SUPPORT ENGINEERS

Applicants should possess several years' experience as Computer Field Service Engineers. Experience with minicomputers or plotting equipment would be particularly relevant. The successful applicant will be a highly competent, technical person, capable of working from own initiative, and willing to travel extensively throughout Europe. c. £10,000 p.a. + car.

### 2) HARDWARE TRAINING INSTRUCTOR

Required to set up a training department from scratch. Successful applicant is likely to be already employed in this capacity, and have extensive computer experience. Applicants should also be good communicators, and be capable of planning training for a diverse range of products. c. £10,000 p.a. + car.

Conditions of employment will reflect the high grade of people being sought, and will be very competitive.

Please write to the first instance to:-

Calma Company, Neville House, 89 Eden Street

Kingston-upon-Thames, Surrey.

(3883)

### COMPUTER ENGINEER

£8,000 + Car

Install new small and disk and associated equipment. Customer training, HNC or graduate with experience.

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### ELECTRIC ENGINEERS - COMPUTER SERVICE ENGINEERS

£6,000-£16,000 throughout UK

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(3881)

MONROSE TECHNICAL STAFF LTD.

## DP Team to set up a New Management Information System

To cope with the increasing Management Information requirements brought about by company expansion an engineering company situated in the North of London is establishing a new department. The new system will cover such functions as stock control, sales information, budget labour control, production, purchasing and accounting. There will, therefore, be considerable scope for suitably qualified men and women, with good business systems experience. Immediate requirements are for:-

## Systems Analysts

Senior Analysts and Analysts are required with sound experience of manufacturing and production techniques and finance. Administrative ability is essential, particularly for the senior positions, and a knowledge of COBOL is desirable.

Austin Knight Advertising

## Programmers

Senior Programmers and Programmers are required with experience preferably in a MIS environment using COBOL. Experience of CIMCOM's TOTAL database management systems would be desirable. Applicants without TOTAL and COBOL experience will be considered, as training can be given.

All positions carry attractive salaries and benefits including assistance with relocation, where appropriate.

Write with details of experience to Position Number AMD 8086, Austin Knight Limited, London W1A 1DS.

Applications are forwarded to the client concerned therefore companies in which you are not interested should be listed in a covering letter to the Position Number Supervisor.



## Computer Manager

Cardiff c. £10,000

This challenging post is created by the installation of a Honeywell L64/DPS2 in the Membership Records Department of the Royal College of Nursing. The College is both the professional organisation and trade union for nurses, with a current membership in excess of 170,000 and growing. Computerisation of membership records and subscriptions is the initial and major task, to be followed by the provision of an in-house service to other departments of the College. The computer will use a network of terminals in Cardiff and London and candidates should have a sound knowledge of communications and database techniques.

Whilst salary and conditions of employment are good it is regretted that assistance with relocation costs cannot be given.

Rcn

Royal College of Nursing

For further details and an application form telephone or write to the Personnel Officer, The Royal College of Nursing, Henrietta Place, London W1M 0AB. Tel: 01-580 2646.

CC computer communications

## Travicom 2

The Travicom System is the world's foremost multiple access airline reservations, ticketing and accounting system. Some 500 United Kingdom travel agents already have direct visual display connection to the seat booking processors of 2D leading international airlines for these purposes.

The Travicom 2 System now being developed at Meldenhead will retain the world lead by increasing several-fold the power available for message switching and transmission. It will operate with Packet Switched Services or with Dedicated Data Networks and will extend the range of services to include package tour, hotel, car rental, sea ferry and rail booking, ticketing and accounting.

KLM have chosen the Travicom 2 System for use throughout Holland. Other airlines and telecommunications authorities are about to do so for their countries.

If you are an experienced programmer or software engineer familiar with any of the following:

- \* DEC or Zilog hardware
- \* RSX-11 operating systems
- \* Corel, Assembler or Micro-Cobol language
- \* Data Communications, Accounting or Commercial systems

and are interested in joining an expanding and exciting project with opportunities to travel and work abroad please contact us for more information.

Telephone Personnel Department, Meldenhead (0828) 71511, Ext. 42, or write to Computer Communications Limited, Fleming House, King Street, Meldenhead, Berkshire SL8 1DU.

(3771)

## 7K FOR 3 MONTHS

## TAX FREE

Programmers up to £600 per week Tax Free

Three months' intensive contract in Saudi Arabia. You will need four years' experience on ICL 2900 series with COBOL under executive, plus George II. All fares, food, accommodation free.

For further information contact:

01-439 8251

AIDGRADE LTD.

## BOX Nos.

Box number replies should be addressed to:

Box No. 2/4 Computer Weekly  
Barnet House  
Barnet Street  
London N11 1BU

## datascene

## RPG II PROGRAMMERS

LONDON CITY to £8,000

A well-established software house specialising in insurance and banking systems are recruiting RPG II Programmers. You should have at least 18 months' experience preferably with IBM hardware and gained within a financial environment. Client contact is expected and applicants will be dealing with management at all levels. These positions offer excellent scope for capable programmers who wish to enhance their careers by utilising the latest IBM software and in-house developed database systems.

## RPG II ANALYST PROGRAMMERS

LONDON CITY, IBM SYS. 32,34,38 to £10,000

An excellent opportunity has arisen for experienced Analyst Programmers in progress into consultancy. Ideally you will have at least three years' IBM RPG II experience, one of which will revolve around banking and insurance projects and will include database, communications and financial planning and modelling. Applicants must be of senior appearance and have been educated to A level standard. An excellent benefit package is offered and futuristically will include a car.

## ANALYST/PROGRAMMERS

E. HANTS ICL ME29 to £7,500

Our client is a well-established member of the consumables industry who needs a competent COBOL programmer who can fulfil the role of Analyst Programmer in a small team. Candidates should have not less than 2 years' experience of programming and analysis and should also possess a good business background. A familiarity with TP would be an advantage.

In addition to the salary, the company offers a pension scheme and staff sales.

## COBOL PROGRAMMERS

N. KENT IBM 4341 c. £7,500

A member of the Underwriting, profession urgently requires programmers to lead them into their new generation of machinery.

Having recently upgraded the hardware, their need is now for programmers with two or more years' experience in COBOL which must have included a familiarity with C.I.C.S.

Additional benefits include a bonus (c.17½%) 50p luncheon vouchers, free BUPA and a holiday bonus. D.4614

## ASSEMBLER PROGS

CITY IBM 3033 c. £10,000

Assembler Programmers are urgently required by this leader in the assurance profession.

Their installation contains the most recent software and hardware including MVS, CICS, TSM, VTAM, TSO and ADABAS.

Candidates should have at least two years' MVS experience and be competent assembler programmers. A background of assurance would be an advantage.

All the benefits of this type of business are available, including cheap mortgages. O.4617

## SOFTWARE PROGRAMMERS

WEST END. UNIVAC £9-11,000

There are opportunities for experienced and versatile SOFTWARE PROGRAMMERS to join two financial institutions based in the WEST END. UNIVAC 1100 experience is essential including some of the following: ASSEMBLER, CMS, DMS, 1100, RSP, QLP. First-class conditions of employment apply in both cases and include SEASON-TICKET LOANS and MORTGAGE SUBSIDY. A good depth of experience coupled probably with a degree in COMPUTER SCIENCE will be required by successful applicants. R.4678/816

## PROGRAMMERS

CITY. BURROUGHS £6-£9,000

A successful City-based computer bureau utilising medium sized BURROUGHS equipment has opportunities for all levels of programmers. Applications are invited from programmers with BURROUGHS, COBOL and ideally DATABASE experience. If this has been gained in a bureau or software house environment so much the better. The chance to develop your experience in a wide range of application areas together with excellent prospects is offered and the company also provides a comprehensive benefits package which includes car parking facilities and season-ticket loan. R.4671

## SENIOR PROGRAMMERS

N. SURREY. HEWLETT PACKARD £9-£10,000

A leading consumer foods company require two Senior Programmers to assist with the development of computer systems following the installation of five HP3000 machines. Applicants should have three to four years' COBOL preferably on Minit with some supervisory experience. Application areas should include either ORDER ENTRY, INVENTORY or FINANCIAL LEDGERS. It is essential that candidates have the ability to ensure good adherence to standards and to motivate staff. A comprehensive company benefits package is offered. R.4750

The above vacancies are only a small selection from those currently on our files and we are always delighted to talk to experienced systems and programming staff wishing to further their careers.

Datascene International Limited  
Sutton House  
66-73 Regent Street  
London W1R 7FB. Telex: 25551.

01-439 7871

24 hour answer phone







FOR  
ALL OUR  
RECRUITMENT  
ADVERTISERS

# An exclusive opportunity to pioneer in the most advanced recruitment medium of the 80's

We invite you to join us in pioneering what may well be the biggest breakthrough in computer recruitment history.

IPC Electrical-Electronic Press Ltd. have launched a Prestel Viewdata appointments service for computer personnel — the first of its kind — and Computer Weekly advertisers are being given an exclusive opportunity to use it.

For just £75 extra, any position advertised in Computer Weekly will also be announced on Prestel screens for five days. The screen announcements will contain the main details given in the Computer Weekly advertisement. And this special computer appointments service will have its own key access number on Prestel.

The Prestel information service is now available in public libraries, universities and computer centres across the country — and many key computer personnel are already regular users. Your advertisement will be telecast on Prestel the day we receive it — up to six days before it appears in Computer Weekly itself — which could enormously increase the speed of response as well as the number of replies.

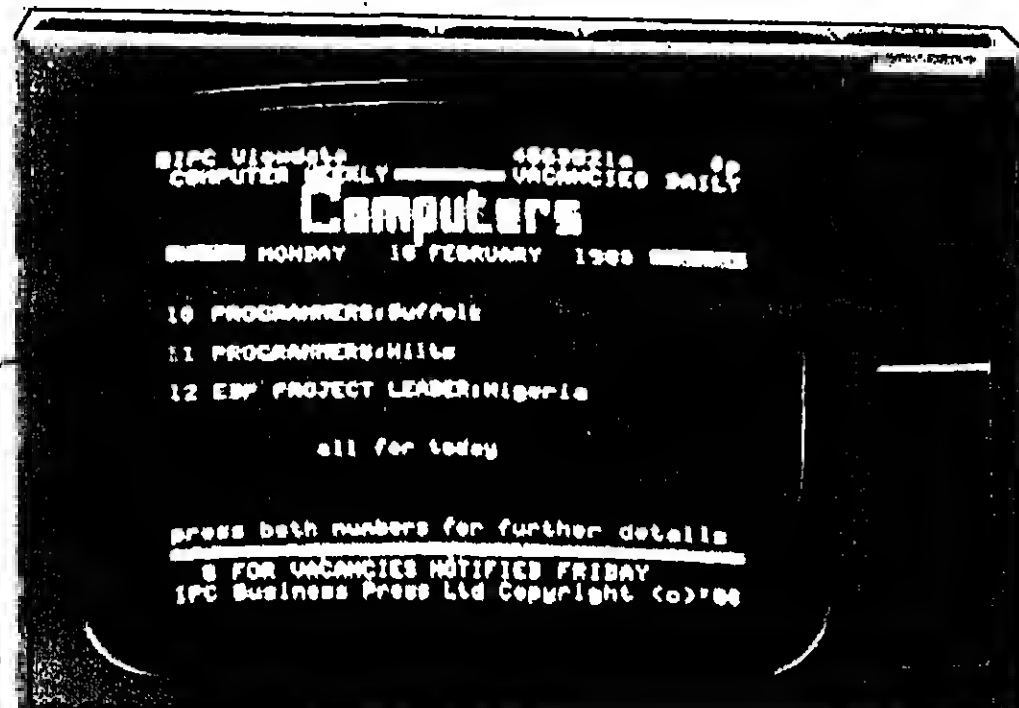
Start your 1980s recruitment programme by harnessing the key information medium of the new decade. Contact Brian Durrant, Classified Advertisement Manager, IPC Electrical-Electronic Press Ltd., Quadrant House, The Quadrant, Sutton, Surrey, SM2 5AS. Tel: 01-661 3106.

## COMPUTER WEEKLY

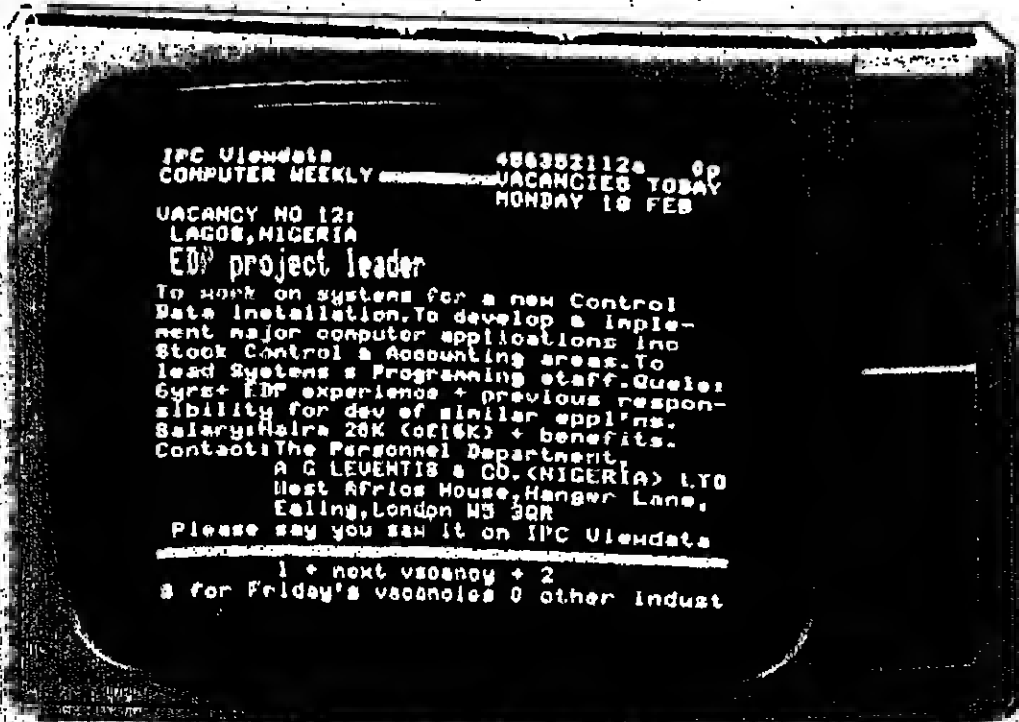
in association with IPC Viewdata

Note: A parallel service is available to Electronics Weekly recruitment advertisers.

### HOW IT WORKS



On dialling the computer appointments number, applicants are immediately informed what jobs are available for the day, and given a key number for each. They can also obtain details of the previous four days' vacancies, so that each job is in effect on offer for a working week, at a cost to the advertiser of only £15 per day.



On pressing the specific job's key number, applicants are given full details of the vacancy (if there's room), all the details that you have given in your appointments ad including how, where and when to apply. This amounts to a 5-day recruitment campaign, screened to a highly select audience.

## KUWAIT — MINI ENGINEER

c. £12,000 Tax Free + Benefits

A substantial Danish group has a well established computer services operation working in Kuwait and expansion has created the need for a further computer field engineer to be responsible for equipment servicing throughout the country. Installations comprise DEC PDP 11 and Systime CPU's, with CDC disc units and Tektronic/Calcomp graphic display units.

The company provides business computer systems, software consultancy and computer based telephone systems. Experienced engineers with a sound background of servicing these types of hardware will find this an exceptional opportunity to join an effective and expanding European group.

An attractive salary is offered for the area together with a comprehensive benefits package including car allowance, return air fares to home country for 1 month's holiday and free furnished, air conditioned accommodation. The appointment is initially for two years with 4 weeks bonus on completion and the option to continue.

The requirement is urgent and interviews will be conducted in the U.K. week commencing 16th December 1980.

Engineers having relevant experience should telephone immediately to discuss the requirement and how to apply. Either single or married status is acceptable. Please quote reference CW 164-C.

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## Data Control Supervisor

£6,275-£7349 + Metropolitan weighting - Enfield

Eastern Gas of Enfield have just restructured various activities within the Management Services Department at their modern Tower Point offices in Enfield and now have an important position available in the Data Control Section.

Responsible for the day to day running of one of two Sections under the direction of the Data Control Officer, who will be mature and sufficiently experienced to be able to organise the daily batch work flow and re-runs, ensure training schedules are implemented and processed and that sections are manned adequately.

To qualify for this responsible position applicants should have a knowledge of 1900/2800's, at least four years' relevant Data Control experience, two of which must have been in a supervisory capacity. There are definite career opportunities for someone who can learn quickly and is excited at the prospect of working on new machines and advanced systems.

Salary offered is in the range of £6,275 - £7,349 + £536 p.e. metropolitan weighting and a range of generous benefits, including subsidised staff restaurant, pension and sick pay schemes, etc.

For an early interview please contact:  
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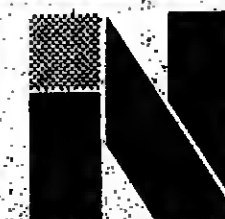
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